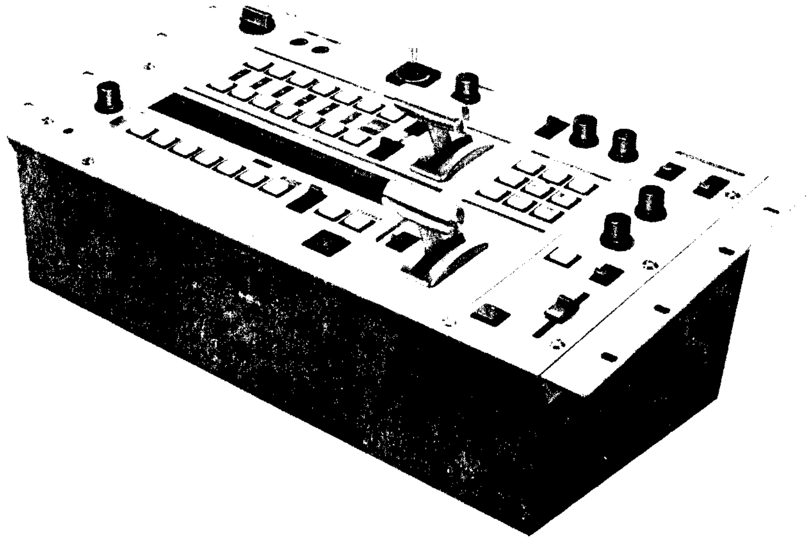
SPECIAL-EFFECTS GENERATOR

SEG-2000A
SEG-2000AP
SEG-2000APM

Revised-2



SONY®

SERVICE MANUAl

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampers). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

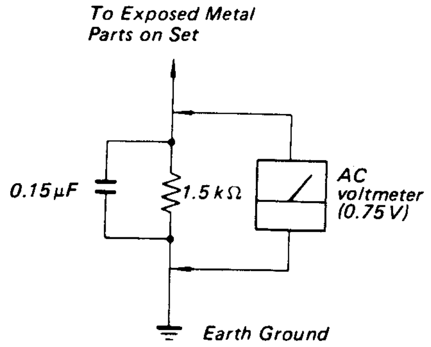


Fig. A. Using an AC voltmeter to check AC leakage.

SPECIFICATIONS

Signal system	EIA standards, NTSC color system
Switching system	Vertical blanking switcher
Effects	
MIX	Dissolve by special effects control lever and PGM/PST MIX lever
WIPE	6 wipe patterns (selectable) Wipe edge: The softness is continuously variable. Border line: Hue, chroma, luminance, width and amplitude are continuously variable.
EXT KEY	Input signal: 0.7 Vp-p (VB) or 10 Vp-p (VBS), 75 ohms, unbalanced, EXT KEY connector (BNC) Slicer circuit is included.
EXT WIPE	EXT WIPE IN connector (6-pin DIN) accepts 84 wipe patterns from WEX-2000 wipe pattern extender
DOWNSTREAM KEYER	Gen-lock with PGM bus line signal B AND W CAMERA connector (6 pin) Output signal: HD, VD, 4 Vp-p, 75 ohms, unbalanced Input signal: 0.7 Vp-p (video), 75 ohms, unbalanced Shadow: Wide and narrow (selectable)
BACKGROUND COLOR	Chroma: 0 — 700 mVp-p (variable according to the hue level) Hue: 0° — 360° Luminance (Y): 0 — 500 mV continuously variable
Input signal	VIDEO IN 1 — 6 connectors (BNC type) × 6 0.7 Vp-p (VB) or 1.0 Vp-p (VBS), 75 ohms, unbalanced, with 75 ohm termination switch (The PHASE INDICATION switch does not function with the VB input signal.) VIDEO IN AUX connector (BNC type) × 1 1 Vp-p (VBS), 75 ohms, unbalanced, with 75 ohm termination switch GEN LOCK IN connector (BNC type) × 1 1 Vp-p (VBS) or 0.3V/0.3V (black burst), 75 ohms
Output signal	PGM OUT 1 — 3 connectors (BNC type) × 3 PST OUT 1, 2 connectors (BNC type) × 2 1 Vp-p (VBS), 75 ohms, unbalanced VIDEO OUT connectors (BNC type) × 7 1 Vp-p (VBS), 75 ohms, unbalanced (loop-through output of the corresponding VIDEO IN connector) BLACK BURST OUT 1 — 4 connectors (BNC type) × 4 Sync, burst 0.3 Vp-p, 75 ohms, unbalanced V DRIVE OUT connector (BNC type) × 1 4 Vp-p, 75 ohms, unbalanced
Tally/intercom	TALLY/INTERCOM 1 — 4 connectors (DIN, 4 pin) × 4 Maximum pick-up value in a relay 24V 200 mA DC
DG, DP	1.5%, less than 1.5° (APL 10 — 90%)
Crosstalk (3.58 MHz)	Over −40 dB
Power requirements	120 Vac ± 10%, 50/60 Hz 10 — 24 Vdc BP-60 Battery pack (1 or 2)
Power consumption	AC operation: 37W DC operation: 30W
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions	Approx. 482 × 168 × 266 mm (w/h/d) (19 × 6⅝ × 10¼ inches)
Weight	Approx. 9.5 kg (20 lb 15 oz)
Supplied accessory	AC power cord 1

Design and specifications subject to change without notice.

RECOMMENDED EQUIPMENT AND ACCESSORIES

Color video camera	DXC-1800, DXC-1850, DXC-6000, DXC-M3
Camera control unit	CCU-1800, CCU-6000, CCU-M3
Black and white camera	AVC-3250
Carrying case	LC-2006
Battery pack	BP-60
Color video monitor	PVM series
Cables	CCDD cable, CCF cable, UGC cable
Wipe pattern extender	WEX-2000
Universal chroma keyer	CRK-2000

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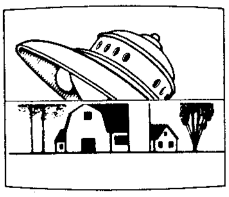
SECTION 1
GENERAL DESCRIPTION

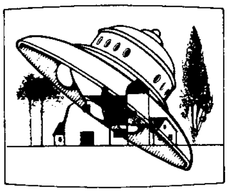
1-1. FEATURES

Wide variety of inputs and outputs
The SEG-2000A is equipped with various connectors:
Six video source inputs and an auxiliary video input, an external wipe signal input, an external key input, a B & W camera input for downstream keyer and a gen-lock input. Three program outputs and two preset outputs, seven video outputs, four black burst outputs and a V drive output. Four tally intercom connectors are also provided.

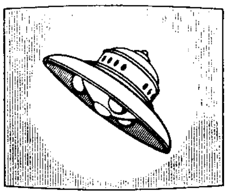
Wipe
Six wipe patterns are available. The edge of the wipe pattern can be soften, sharpened or given a colored border as desired.



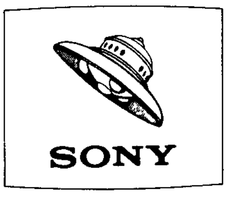
Cut in and mixing
Instantaneous program transition—cut in—or gradual transition of one program to another—mix—is possible.



External key
The A and B bus pictures may be keyed with a video signal or key signal from a camera, etc. connected to the EXT KEY IN connector.



Downstream keyer
Letters or figures from a monochrome camera can be key-inserted in the program and preset pictures. For easier viewing, shadows can be produced on the downstream keying signal.



Background color
A built-in background color generator permits color background for keying, for the border of the wipe pattern, etc. Hue, chroma and luminance of the background color are continuously adjustable, so that a precise color can be obtained.

Easy phase adjustment
The H and SC phase difference between the SEG and the connected equipment can be easily adjusted by observing the indicator pattern displayed on the preset monitor screen.

3-way power operation
The unit can be powered by ac house current, BP-60 rechargeable battery packs or an external dc source.

Rack mounting
The unit is designed to be mounted in a 19-inch EIA standard rack.

Portability
The unit can be used outdoors when it is installed in an optional LC-2006 carrying case and powered by BP-60 rechargeable battery packs.

Micro computer control
Operations are controlled by the built-in micro computer.

1-2. PRECAUTIONS

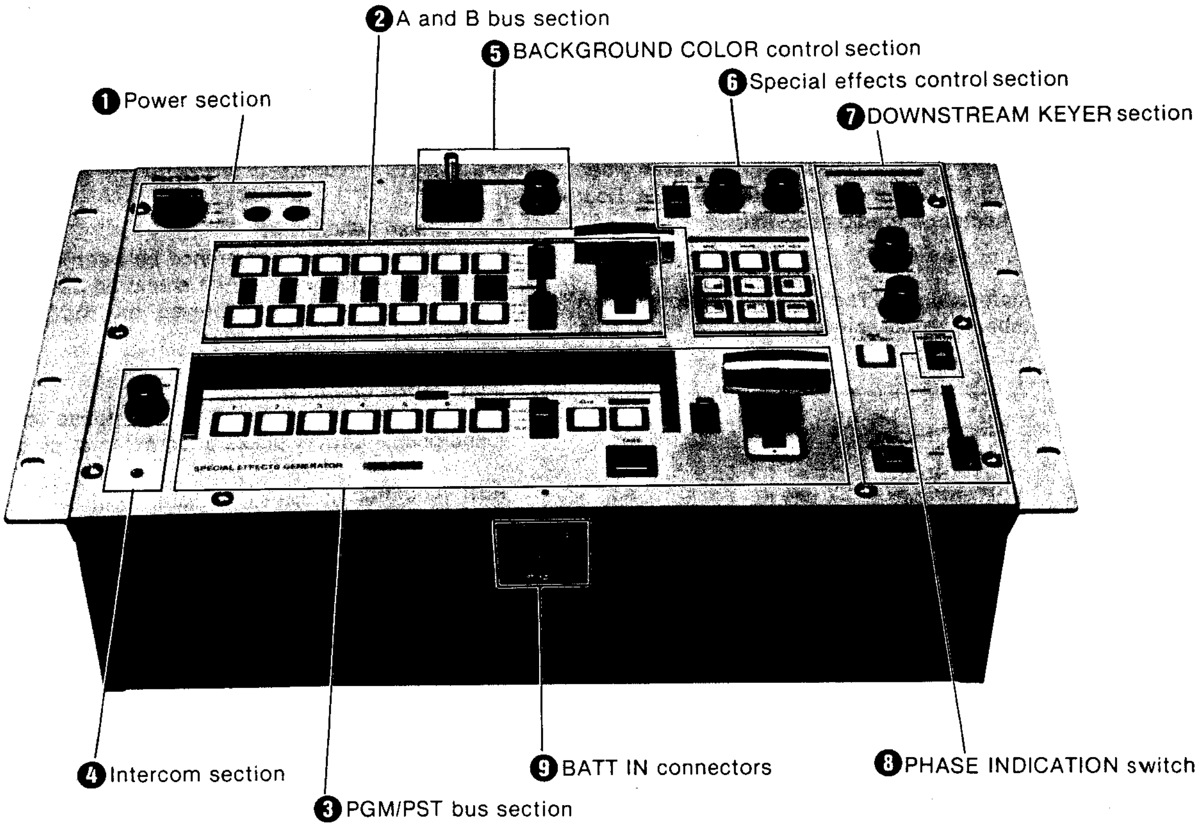
On safety
- For ac operation, operate the unit only on 120 V ac, 50/60 Hz. For dc operation, use the BP-60 battery pack or a dc power source of 10 - 24 V.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time.
- To disconnect a cord, pull it out by the plug. Never pull the cord itself.

On installation
- Allow adequate air circulation to prevent internal heat buildup. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation slots.
- Do not install the unit near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or mechanical vibration or shock.
- Keep the unit away from equipment with strong magnets, such as speakers.

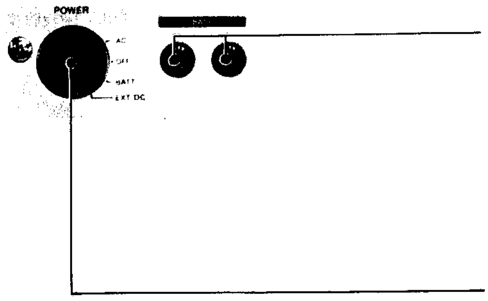
On cleaning
Clean the cabinet, panel and controls with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent such as alcohol or benzine which may damage the finish.

1-3. LOCATION AND FUNCTION OF PARTS AND CONTROLS

1-3-1. Control Panel


② A and B bus section
⑤ BACKGROUND COLOR control section
⑥ Special effects control section
① Power section
⑦ DOWNSTREAM KEYER section
SPECIAL EFFECTS GENERATOR
④ Intercom section
⑨ BATT IN connectors
⑧ PHASE INDICATION switch
③ PGM/PST bus section

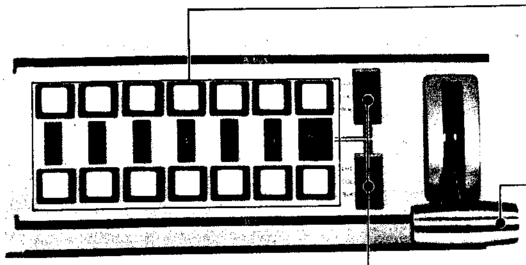
① Power section


POWER
AC
OFF
BATT
EXT DC

BATT (battery) meters and low voltage alarm lamps
The BATT 1 and 2 meters show the condition of the BP-60 rechargeable battery packs connected to the BATT IN 1 and 2 connectors during battery operation. When the voltage supplied from a rechargeable battery pack falls below the rated value, the corresponding lamp will blink and after a few minutes the power will be interrupted. When a lamp or lamps start blinking, replace the battery or batteries.

POWER switch
Select the power source with this switch. When the unit is not being used, set the switch to OFF.
AC: For use with an ac power source.
OFF: To turn the unit off.
BATT: For use with rechargeable battery packs.
EXT. DC: For use with an external dc power source connected to the EXT DC IN connector.

❷ A and B bus section

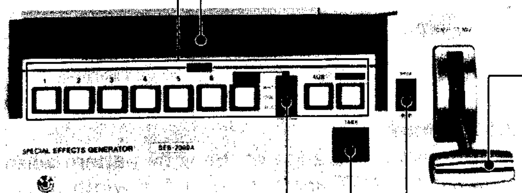


A and B bus buttons
Select the desired video inputs or the built-in color generator for special effects. The pressed buttons will light up and the button of the input selected as the program output will blink.

Special effects control lever
Gradually replaces the A bus picture with the B bus picture, or vice versa, when the MIX or WIPE EFFECTS SELECT button is engaged. When the lever is moved to the uppermost position, the A bus picture will be obtained and when the lever is moved to the lowermost position, the B bus picture will be obtained.

BACKGROUND mode select switches
Select the background color of the corresponding bus.
WHT: White
COL: Color selected by the BACKGROUND COLOR joystick.
BLK: Black

❸ PGM/PST (program/preset) bus section



PST bus buttons
Selects the desired PST bus outputs from the PST OUT connectors when the PGM/PST switch is set to PST. The PGM bus outputs from the PGM OUT connectors are selected simultaneously when the PGM/PST switch is set to PGM.
The pressed button will light up.

PGM bus indicator
The input selected as the program output from the PGM OUT connectors is indicated here.

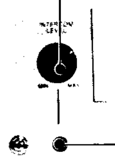
PGM/PST MIX lever
Gradually replaces the PGM bus picture with the PST bus picture, or vice versa.
- This lever will function only when the PGM/PST switch is set to PST.

PGM/PST switch
PGM: Set to this position when the PST and PGM bus outputs are to be selected simultaneously by a PST bus button.
PST: Set to this position when only the PST bus output is to be selected by a PST bus button.
- When you want to adjust the phase, be sure to set this switch to PGM and the PHASE INDICATION switch to ON.

TAKE button
Instantaneously switches the PST bus picture to the PGM bus picture.
- This button will function only when the PGM/PST switch is set to PST.

BACKGROUND mode select switch
Selects the background color.
WHT: White
COL: Color selected by the BACKGROUND COLOR joystick.
BLK: Black

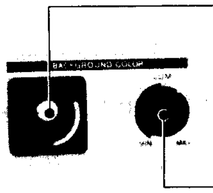
❹ Intercom section



INTERCOM LEVEL control
Adjusts the received sound level from the other video unit at the headset connected to the INTERCOM connector.

INTERCOM connector
Connect the Sony DR-100 intercom headset (optional) here to allow communication between the SEG-2000A and the video equipment connected to the rear TALLY/INTERCOM connectors.

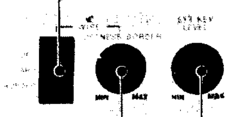
❺ BACKGROUND COLOR control section



BACKGROUND COLOR joystick
Adjusts the hue of the background color by rotating and the chroma level by tilting.

LUM (luminance) control
Adjusts the brightness of the background color. Clockwise rotation brightens the color.

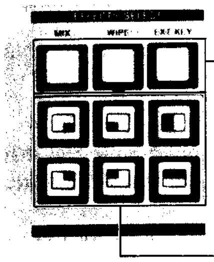
❻ Special effects control section



WIPE edge selector
SOFT : To soften the edge of the wipe pattern.
HARD : To sharpen the edge of the wipe pattern.
BORDER : To border the edge of the wipe pattern. The border color is the complementary color (color supplied when the joystick is rotated 180°) of the color selected by the BACKGROUND COLOR joystick.

EXT KEY LEVEL control
Adjusts the key level of the input signal connected to the EXT KEY IN connector.

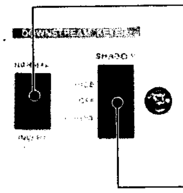
WIPE SOFTNESS/BORDER control
This control adjusts the softness of the edge of the wipe pattern when the WIPE edge selector is set to SOFT and it adjusts the width of the border of the wipe pattern when the WIPE selector is set to BORDER.



EFFECTS SELECT buttons
MIX : To mix the A and B bus pictures.
WIPE : To wipe the A bus picture with the B bus picture, or vice versa, using the wipe pattern selected by the wipe pattern buttons.
EXT KEY : To key the A and B bus pictures using the input signal from the EXT KEY IN connector.

Wipe pattern buttons
Select the wipe pattern.

⑦ DOWNSTREAM KEYER section

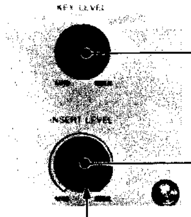


NORMAL/INVERT switch

NORMAL: When keying black letters against a white background.
INVERT: When keying white letters against a black background.

SHADOW switch

WIDE: To produce a wide shadow to the downstream keying signal.
OFF: No shadow.
NARROW: To produce a narrow shadow to the downstream keying signal. When the letters to be keyed are rather small, use this position.



KEY LEVEL control

Adjusts the downstream keying level.

INSERT LEVEL control

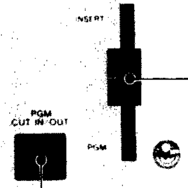
Adjusts the brightness level of the insert signal. Turn the control to the right to obtain white letters and to the left to obtain black letters.

At this position, the level is 700 mV. If the control is turned counterclockwise into the black zone, the level may be too high.

PST
CUT IN/OUT

PST CUT IN/OUT button

Press to cut in or cut out the keying signal from the B & W camera connected to the B/W CAMERA connector on the PST bus picture.
The button lights when the letters are inserted.



INSERT lever

Move the lever upwards (to INSERT) to gradually insert the letters to the PGM bus picture and move the lever downwards (to PGM) to remove the letters. At the PGM position no letter will appear.
When the letters are inserted, the PGM CUT IN/OUT button will light up.

PGM CUT IN/OUT button

Press to cut in or cut out the letters to the PGM bus picture.
The button lights when the letters are inserted.

⑧ PHASE INDICATION switch

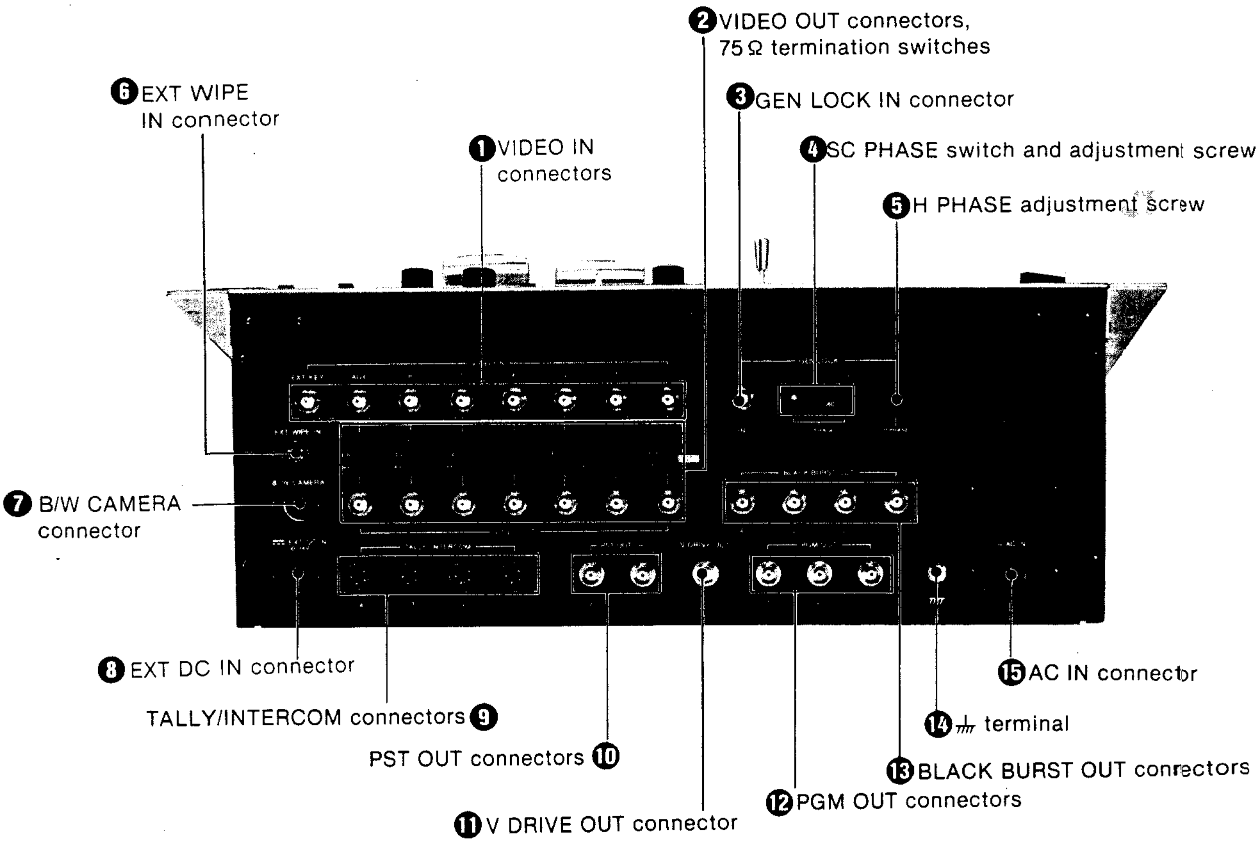
PHASE
INDICATION
ON
OFF

For phase adjustment between the SEG and the connected equipment, set this switch to ON and set the PGM/PST switch to PGM. The phase indicator pattern will appear on the preset monitor screen. Use this pattern as a guide for phase adjustment. See page 14.

⑨ BATT (battery pack) IN connectors

To operate the SEG with battery packs, connect Sony BP-60 battery packs (optional) to these connectors.

1-3-2. Connector Panel


❶ VIDEO IN connectors
❷ VIDEO OUT connectors, 75 Ω termination switches
❸ GEN LOCK IN connector
❹ SC PHASE switch and adjustment screw
❺ H PHASE adjustment screw
❻ EXT WIPE IN connector
❼ B/W CAMERA connector
❽ EXT DC IN connector
TALLY/INTERCOM connectors ❾
PST OUT connectors ❿
⓫ V DRIVE OUT connector
⓬ PGM OUT connectors
⓭ BLACK BURST OUT connectors
⓮ ⏚ terminal
⓯ AC IN connector

❶ VIDEO IN connectors (BNC type)

Connect video signals from video cameras, VTRs which are connected to time base correctors, etc.

1 to 6 connectors: The input signals to these connectors should be synchronized with the SEG-2000A.

AUX connector: An input signal which is not synchronized with the SEG-2000A can be connected here. Connect the VTR directly.

EXT KEY connector (75-ohm termination): Connect a keying signal which is synchronized with the SEG-2000A here for external key operation.

❷ VIDEO OUT connectors (BNC type) and 75 Ω termination switch

The video signals connected to the above VIDEO IN connectors are fed out from these connectors (loop-through output). Connect to the video input connectors on a monitor to monitor the video signal connected to the VIDEO IN connector directly.

- Be sure to set the 75 Ω termination switch to OFF when these connectors are used. When they are not being used, set this switch to ON.

❸ GEN LOCK IN (generator lock input) connector (BNC type)

Connect a reference VBS or black burst signal to this connector to synchronize the SEG-2000A with an external sync signal. All equipment connected to the SEG will then be synchronized with this reference signal.

❹ SC PHASE switch and adjustment screw

This switch roughly adjusts the subcarrier phase of the PGM output signal to the subcarrier phase of the gen-lock reference signal.

After rough adjustment with the SC PHASE switch, adjust the SC phase precisely with the adjustment screw.

❺ H PHASE adjustment screw

Turn to adjust the H phase of the PGM output signal to that of the gen-lock reference signal.

❻ EXT WIPE IN (external wipe signal input) connector (DIN 6-pin)

Connect the optional Sony WEX-2000 wipe pattern extender. Selection from 84 wipe patterns and wipe operation can be performed on the WEX-2000.

❼ B/W CAMERA (black and white camera) connector (6-pin)

For downstream keyer operation, connect a B & W camera with a 6-pin connector using a CCF camera cable.

❽ EXT DC IN (external dc input) connector (DIN 4-pin)

For external dc power operation, connect a dc power source (10 - 24 V dc) here.

❾ TALLY/INTERCOM connectors (DIN 4-pin)

Connect to the tally/intercom connector of a camera or a camera control unit using a CCDD cable. When a headset is connected to the INTERCOM connector on the front panel, the communication between the SEG and the camera operators is possible. The tally lamp of the camera selected by the SEG will light up.

- The TALLY/INTERCOM 1 to 4 connectors correspond to the VIDEO IN 1 to 4 connectors.
- The tally circuit incorporates a relay with a maximum pick-up value of 24 V, 200 mA DC.

❿ PST OUT (preset output) connectors (BNC type)

These connectors output the preset picture signals selected by the PST bus button.

Connect to the video inputs on monitors.

⓫ V DRIVE OUT (vertical drive output) connector (BNC type)

A 4 V p-p vertical drive signal is output here.

⓬ PGM OUT (program output) connectors (BNC type)

Connect to the video inputs of monitors, VTRs, etc.

⓭ BLACK BURST OUT connectors (BNC type)

Black burst (sync 0.3 V p-p, burst 0.3 V p-p) signals are output here. Connect these outputs to the GEN LOCK IN connectors of the video equipment being used so that the equipment will be synchronized with the SEG-2000A. The same black burst signal is output at each connector in parallel. The 1 to 4 connectors are independent of the VIDEO IN 1 to 4 connectors.

⓮ ⏚ (ground) terminal

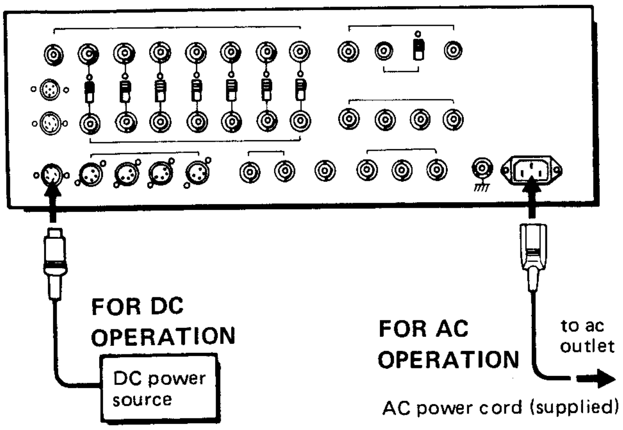
Connect to a good ground when required.

⓯ AC IN connector

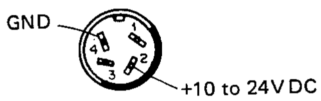
Connect the supplied ac power cord here.

1-4. POWER SOURCES

The SEG-2000A operates with the power from any of these three sources.
—AC power
—BP-60 battery pack
—DC power source of 10 V - 24 V



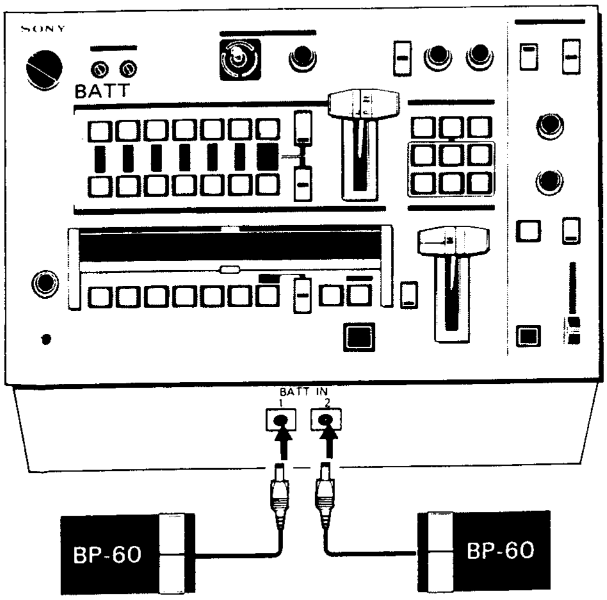
Composition of the EXT DC IN connector



Note
When the SEG-2000A operates with the dc power, some connection may cause noises on the picture when the camera control units, monitors, etc. are connected. For details, please consult the Sony dealer from whom this unit was purchased.

BATTERY PACK

Connect the BP-60 battery packs to the BATT IN connectors.

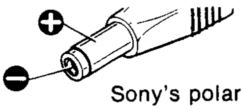


- The LC-2006 carrying case (optional) is convenient for carrying the SEG-2000A with two battery packs for portable operation.

Battery life
Two fully charged batteries allow about two and one half hours of continuous operation at normal temperature. Operation with a battery pack is, of course, possible.
The two batteries operate in series. When the voltage of one of them falls below the rated value, the BATT lamp flickers, the battery meter registers the red scale and after a few minutes the power from that battery is automatically shut off.
To replace the exhausted battery with a charged one, be sure to set the POWER switch to OFF. If the battery is replaced while the other battery is supplying the power, the noise may appear.

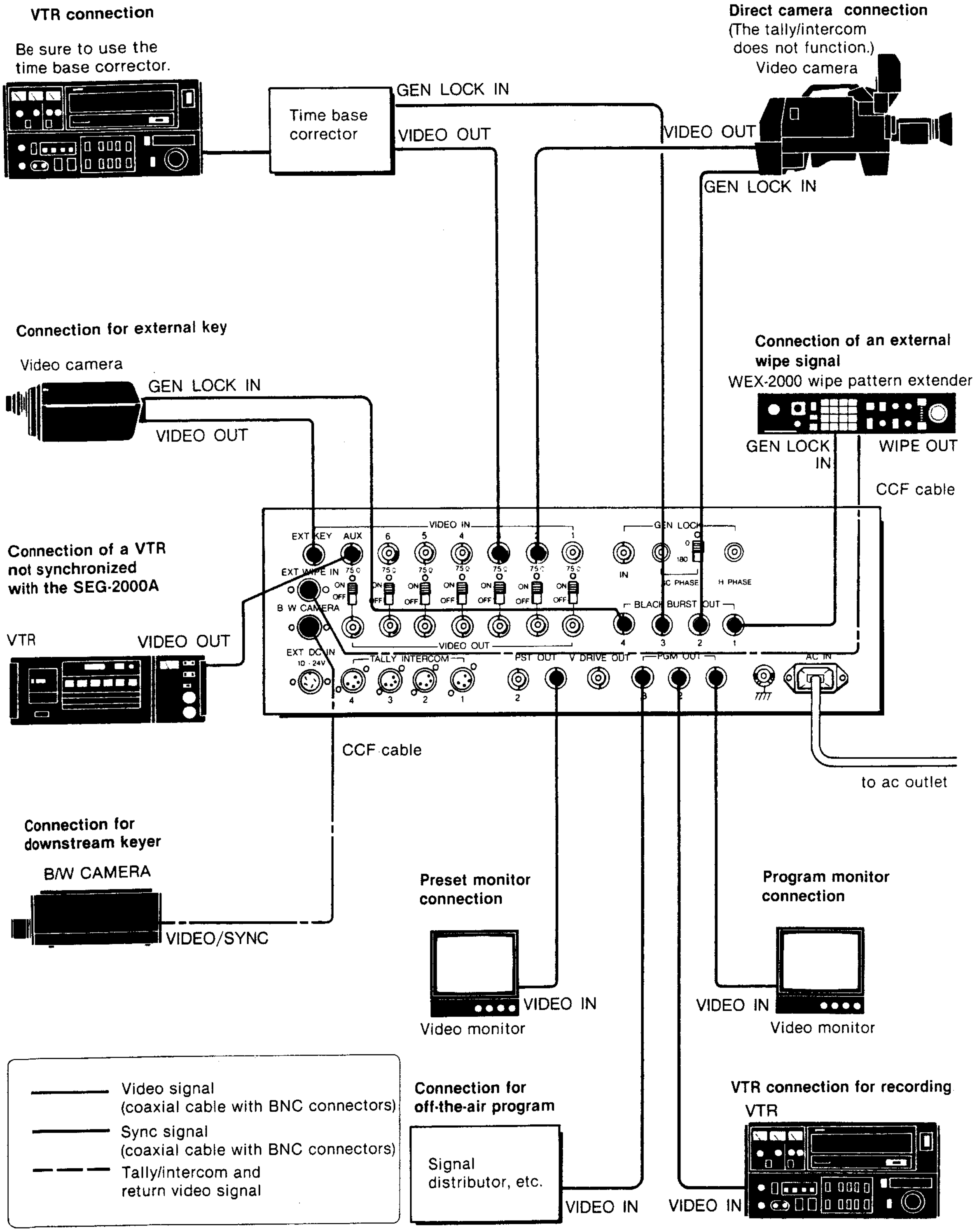
Notes on batteries

- The operating life of the battery will be shortened when it is very cold or when it is exhausted. When the operating period of a recharged battery is less than 30 minutes at normal temperature, the battery should be replaced with a new one.
- Charge the battery immediately after use using the BC-20 or BC-1000 battery charger. Do not permit the battery to remain discharged.
- When the battery pack is not used for a long time, be sure to recharge it every six months.
- Do not use any battery pack other than that manufactured by Sony. Polarity of the battery plug of other packs may differ.

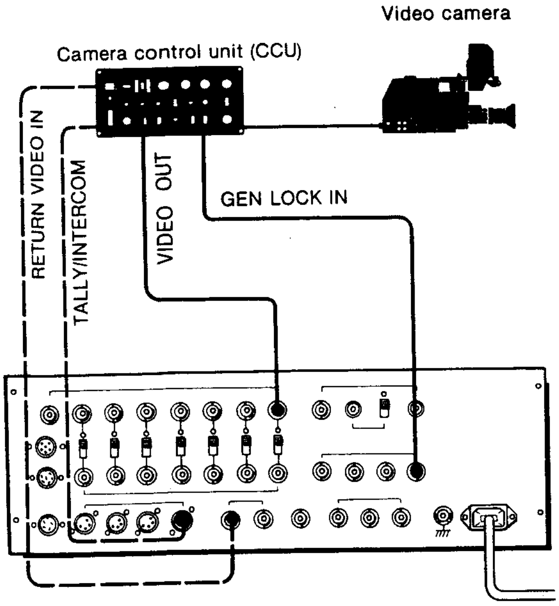


Sony's polarity

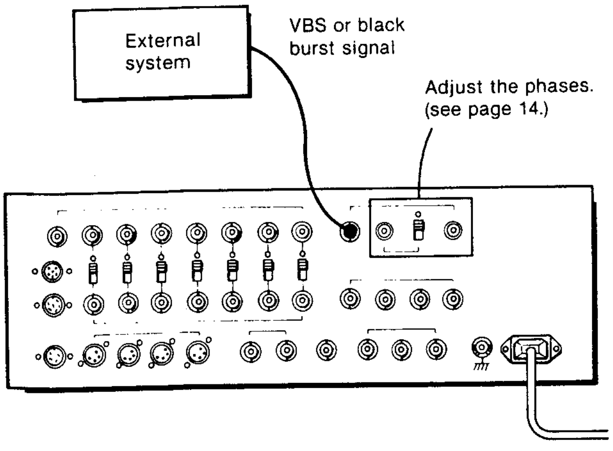
1-5. CONNECTIONS


VTR connection
Be sure to use the time base corrector.
Time base corrector
GEN LOCK IN
VIDEO OUT
Direct camera connection
(The tally/intercom does not function.)
Video camera
VIDEO OUT
GEN LOCK IN
Connection for external key
Video camera
GEN LOCK IN
VIDEO OUT
Connection of an external wipe signal
WEX-2000 wipe pattern extender
GEN LOCK IN
WIPE OUT
CCF cable
Connection of a VTR not synchronized with the SEG-2000A
VTR
VIDEO OUT
EXT KEY
AUX
VIDEO IN
6
5
4
3
2
1
GEN LOCK
IN
SC PHASE
H PHASE
EXT WIPE IN
B W CAMERA
BLACK BURST OUT
VIDEO OUT
EXT DC IN
TALLY INTERCOM
PST OUT
V DRIVE OUT
PGM OUT
AC IN
CCF cable
to ac outlet
Connection for downstream keyer
B/W CAMERA
VIDEO/SYNC
Preset monitor connection
VIDEO IN
Video monitor
Program monitor connection
VIDEO IN
Video monitor
Video signal (coaxial cable with BNC connectors)
Sync signal (coaxial cable with BNC connectors)
Tally/intercom and return video signal
Connection for off-the-air program
Signal distributor, etc.
VIDEO IN
VTR connection for recording
VTR
VIDEO IN

TO CONNECT A CAMERA USING A CCU

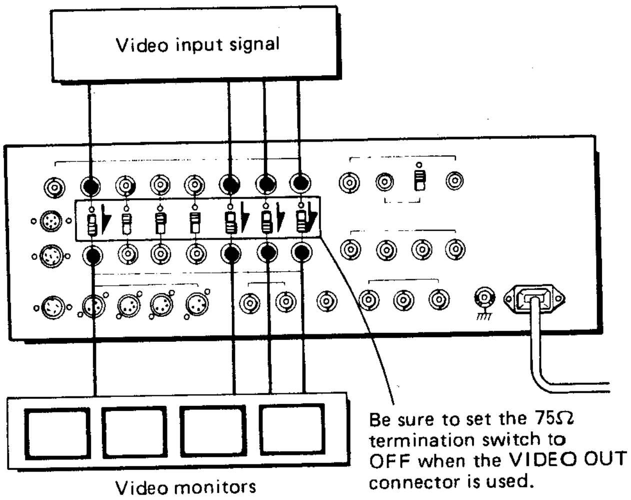

Video camera
Camera control unit (CCU)
RETURN VIDEO IN
TALLY/INTERCOM
VIDEO OUT
GEN LOCK IN

TO SYNCHRONIZE THE SEG-2000A WITH AN EXTERNAL SYSTEM


External system
VBS or black burst signal
Adjust the phases. (see page 14.)

CONNECTION FOR DIRECT MONITORING

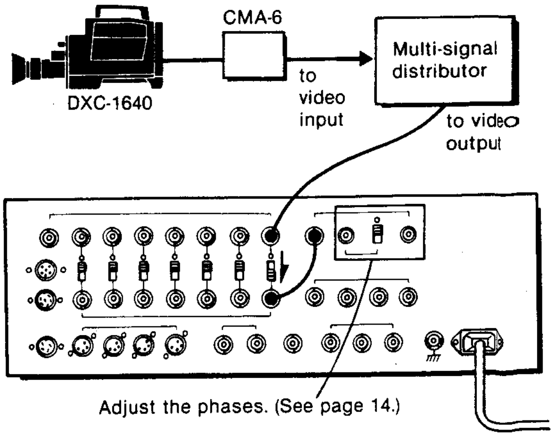
To monitor the video signal to the VIDEO IN connector, connect video monitors to the VIDEO OUT connectors corresponding to the input signal.


Video input signal
Video monitors

Be sure to set the 75Ω termination switch to OFF when the VIDEO OUT connector is used.

TO USE A CAMERA WHICH CANNOT BE SYNCHRONIZED WITH THE VBS OR BLACK BURST SIGNAL

Connect the camera through the multi-signal distributor as illustrated below so that the SEG-2000A will synchronize with the camera.


CMA-6
DXC-1640
to video input
Multi-signal distributor
to video output

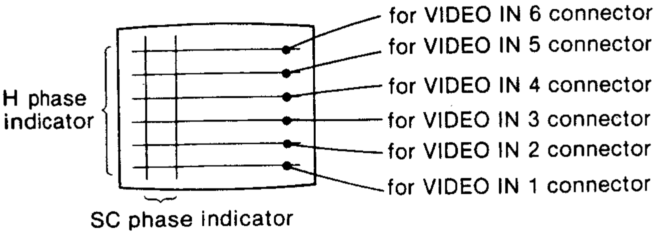
Adjust the phases. (See page 14.)

- The connection to other VIDEO IN connectors are the same as on the previous page.

1-6. ADJUSTMENTS

1-6-1. Adjust the phases, video level, hue, chroma level, etc., between the connected equipment.

1. Adjust the phases of all equipment as follows.
   1) Turn the power of all equipment on.
   2) Turn the SEG-2000A on.
   3) Set the PGM/PST switch to PGM.
   4) Set the PHASE INDICATION switch to ON. The phase indicator pattern will appear on the preset monitor screen.


for VIDEO IN 6 connector
for VIDEO IN 5 connector
H phase indicator
for VIDEO IN 4 connector
for VIDEO IN 3 connector
for VIDEO IN 2 connector
for VIDEO IN 1 connector
SC phase indicator

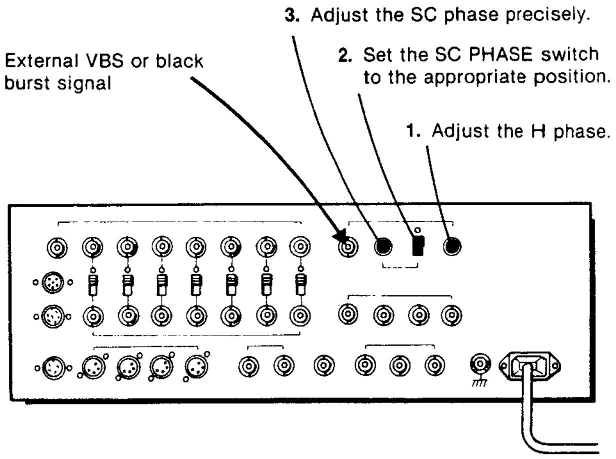
   5) Press the PST bus line button "1".
   6) Turn the H phase control on the equipment connected to the VIDEO IN 1 connector so that the H phase indicator for the VIDEO IN. 1 connector appears on the preset monitor screen.
   7) Turn the SC phase control on the same equipment so that the two lines of the SC phase indicator are as close as possible.
   - The adjustment of the phases of the equipment connected to the VIDEO IN 1 connector is finished. For the equipment connected to the VIDEO IN 2 through 6 connectors, repeat steps 5), 6) and 7).
   - Be sure to adjust the H phase first, then the SC phase.
2. Adjust the color of the video monitors.
   Use the color bars generated by the video camera or the camera control unit to adjust the hue so that the same color will be obtained on all video monitors.
3. Adjust the level—video output level, pedestal level, chroma level, hue, etc.—of all equipment so that the same level is obtained.

- When the input signal is the VB, the phase indicator does not function.

TO SYNCHRONIZE WITH AN EXTERNAL SYSTEM

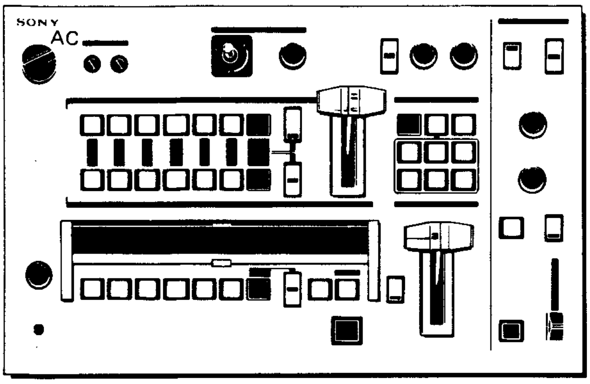
To synchronize the SEG-2000A with an external VBS or black burst signal, align the H phase and the SC phase of the external signal with the H phase and SC phase of the PGM OUT signal.

- To use the phase indicator pattern for adjusting the phases, connect an external sync signal to one of the VIDEO IN 1 - 6 connectors and connect the loop-through output signal to the GEN LOCK IN connector.


3. Adjust the SC phase precisely.
External VBS or black burst signal
2. Set the SC PHASE switch to the appropriate position.
1. Adjust the H phase.

1-6-2. OPERATION

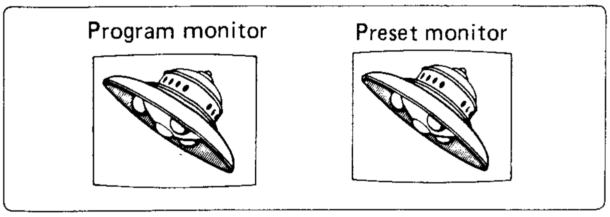
Set the POWER switch to the appropriate position depending on the power source to be used. The unit will be turned on and the buttons indicated below will light up.



To output a program picture

1. Set the PGM/PST switch to PGM.
2. Select the program picture with the PST bus button.

(The picture of the preset monitor is simultaneously selected.) The corresponding PGM bus indicator will light.

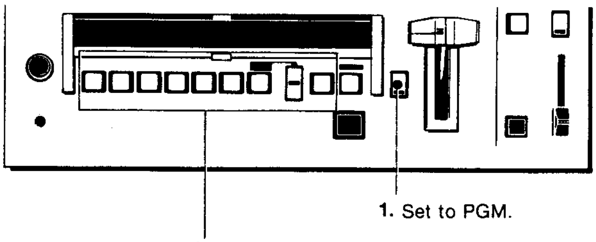

Program monitor
Preset monitor

CUT IN

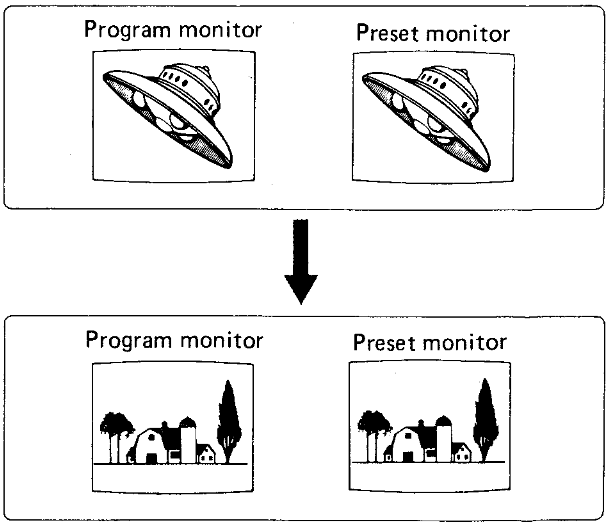
An instantaneous transition between two video sources can be made in the following two ways.

Using the PST bus buttons

The program output can be switched directly to another output.

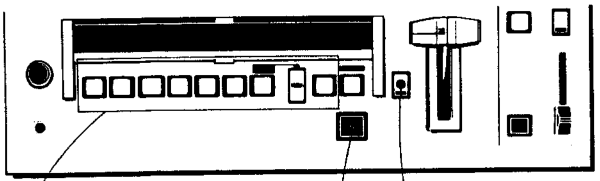


1. Set to PGM.
2. Select the program picture. (Each time a PST bus button is pressed, the pictures on the program monitor and the preset monitor will be switched to the other picture simultaneously.)

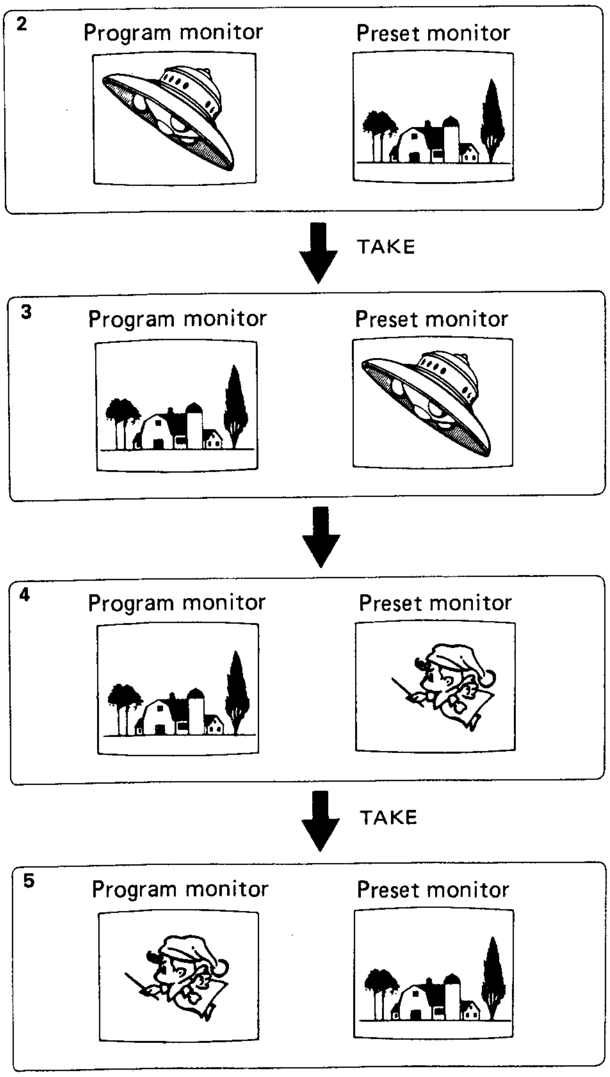

Program monitor
Preset monitor
Program monitor
Preset monitor

Using the TAKE button

You can check the picture to be output next on the preset monitor.



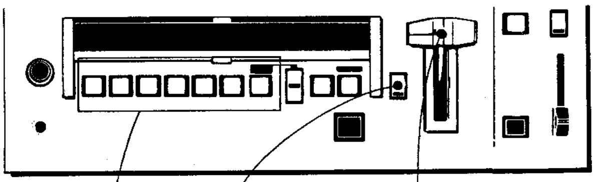
1. Set to PST.
2. Select a preset picture.
3. Press TAKE.(The program picture and the preset picture will be exchanged instantaneously.)
4. Select the next preset picture.
5. Press TAKE to cut in the next picture.


2
Program monitor
Preset monitor
TAKE
3
Program monitor
Preset monitor
4
Program monitor
Preset monitor
TAKE
5
Program monitor
Preset monitor

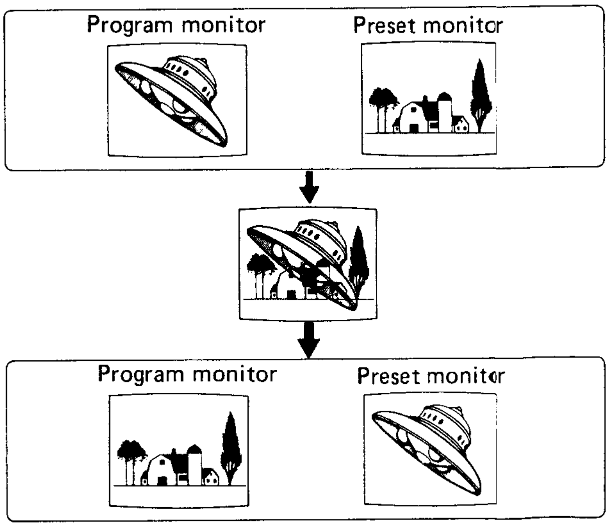
TO INTERCHANGE TWO PICTURES BY MIXING

The mixing can be done in the following two ways.

Using the PGM/PST MIX lever



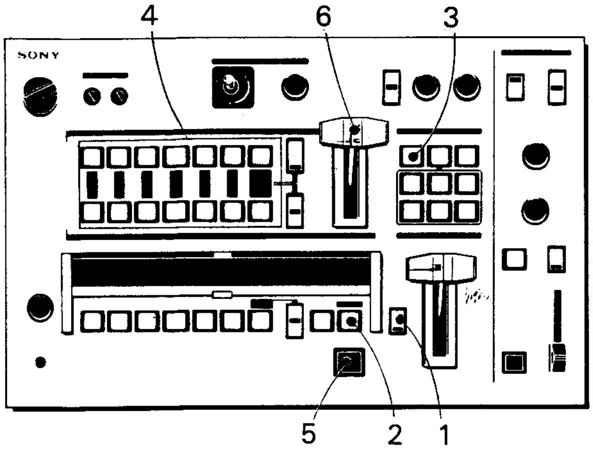
1. Set to PST.
2. Select a preset picture.
3. Move to the opposite(The program and preset pictures will be gradually interchanged.)
4. Select the next preset picture.
5. Move to the opposite position.


Program monitor
Preset monitor
Program monitor
Preset monitor

- ●The speed of the interchange depends on how fast you move the lever.
- ●The uppermost and the lowermost positions of the PGM/PST MIX lever is not assigned to either the program or preset picture. The pictures will be interchanged each time the lever is moved from one position to the other.
- ●The signal connected to the AUX connector cannot be mixed with the VIDEO IN 1 - 6 inputs and the background color. When the PGM/PST MIX lever is moved to the end, the picture is exchanged instantaneously.

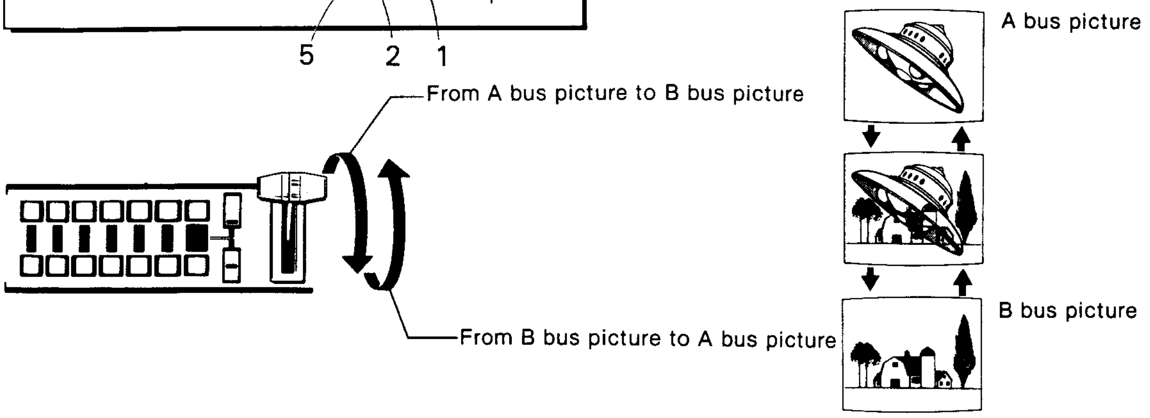
Using the MIX button

The picture selected by an A bus button can be gradually replaced by the picture selected by a B bus button, and vice versa.



1. Set the PGM/PST switch to PST.
2. Press the EFFECTS button.
3. Press the MIX button.
4. Select an A bus picture with an A bus button and a B bus picture with a B bus button.
5. Press the TAKE button.
6. Move the special effects control lever to the opposite position.
   When the lever is moved from the A bus side to the B bus side, the A bus picture on the program monitor screen will dissolve to the B bus picture, and vice versa.

- The button which corresponds to the picture being output from the PGM OUT connectors blinks.
- The speed of the interchange depends on how fast you move the lever.


From A bus picture to B bus picture
A bus picture
B bus picture
From B bus picture to A bus picture

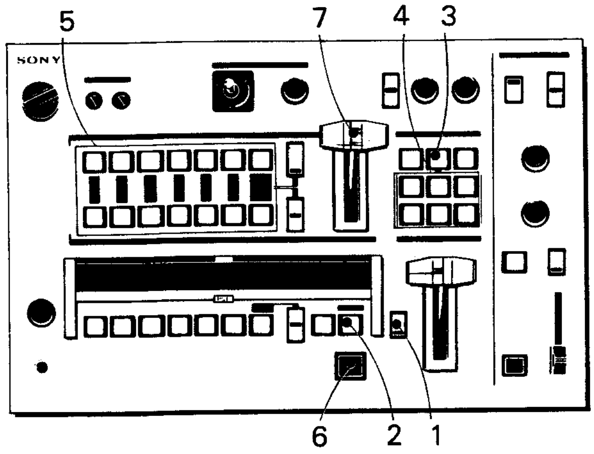
TO SWITCH CONSECUTIVELY THREE OR MORE PICTURES

Use the special effects control lever and the PGM/PST MIX lever.

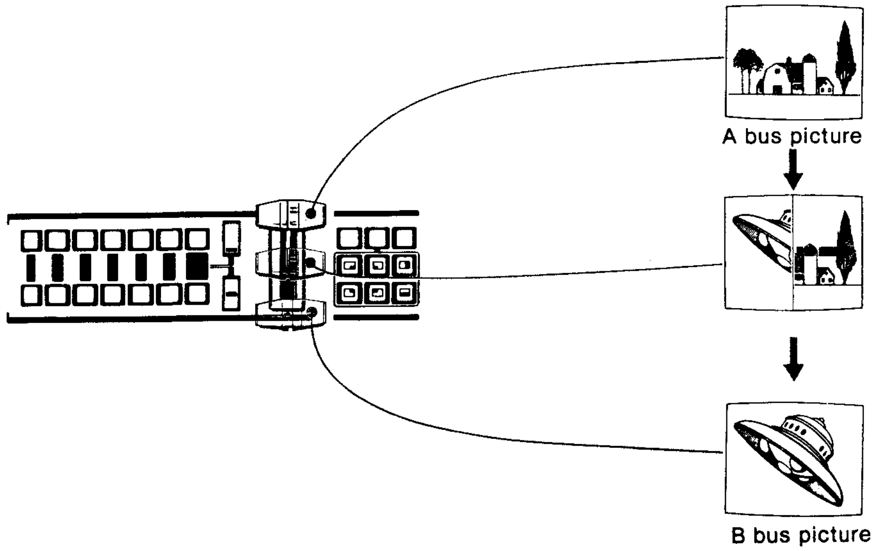
1. Switch the A bus picture to the B bus picture or the B bus picture to the A bus picture as in "Using the MIX button".
2. Select the picture to be output next with the PST bus button.
3. Move the PGM/PST MIX lever to the opposite position.

WIPE

Two inputs selected by an A bus button and a B bus button may be wiped as described below. Six different wipe patterns are available.

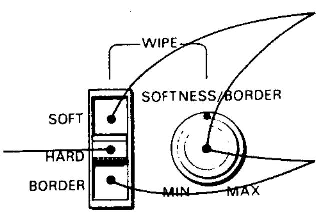


1. Set the PGM/PST switch to PST.
2. Press the EFFECTS button.
3. Press the WIPE button.
4. Select the desired wipe pattern.
5. Select an A bus picture with an A bus button and a B bus picture with a B bus button.
6. Press the TAKE button.
7. Move the special effects control lever to the opposite position. The program picture will be wiped by the selected wipe pattern. The button which corresponds to the picture being output from the PGM OUT connectors blinks.



The edge of the wipe pattern

The dividing line of the wipe pattern can be sharpened, softened or bordered with the WIPE edge selector and the SOFTNESS/BORDER control.



To soften the wipe pattern edge
Set the WIPE edge selector to SOFT and adjust the softness with the SOFTNESS/BORDER control.

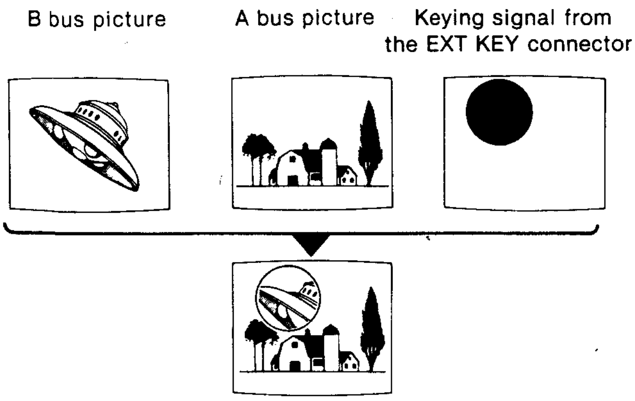
To sharpen the wipe pattern edge
Set the WIPE edge selector to HARD.

To border the wipe pattern edge
Set the WIPE edge selector to BORDER and adjust the width of the border with the SOFTNESS/BORDER control.

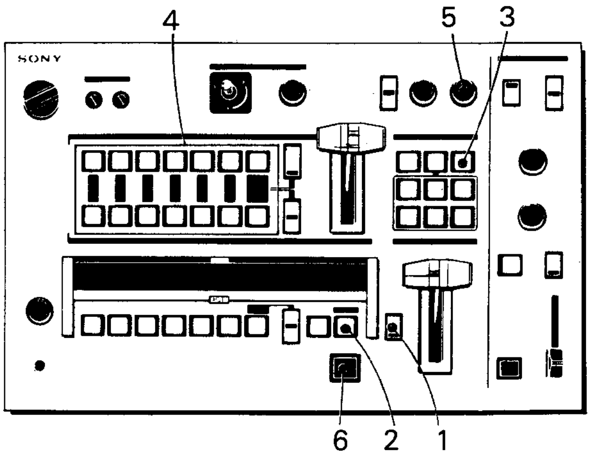
- Adjust the color of the border with the BACKGROUND COLOR joystick. The border color is the complementary color of the color selected by the joystick.

EXTERNAL KEY

The B bus picture is key-inserted in the A bus picture with the keying signal from the EXT KEY connector.

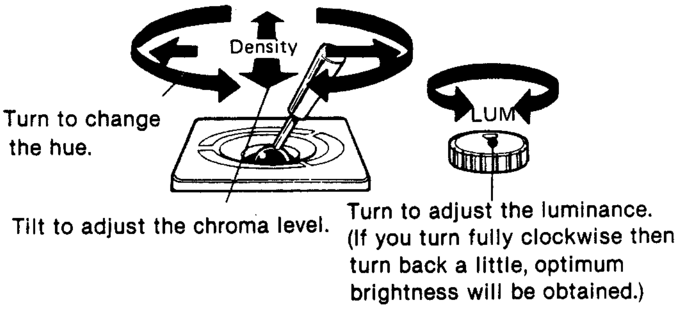

B bus picture
A bus picture
Keying signal from the EXT KEY connector

1. Set the PGM/PST switch to PST.
2. Press the EFFECTS button.
3. Press the EXT KEY button.
4. Select an A bus picture with an A bus button and a B bus picture with a B bus button. The buttons on the A bus line and B bus line blink.
5. Turn the EXT KEY LEVEL control so that the keying signal will appear clearly.
6. Press the TAKE button.



BACKGROUND COLOR

You can select the color of the background with the BACKGROUND mode select switch when the BACKGROUND button is pressed.
For a white background, set the switch to WHT.
For a black background, set the switch to BLK.
For a colored background, set the switch to COL and adjust the color with the BACKGROUND COLOR joystick and the LUM control.
Using the background color function, the picture can be faded in from a white, black or colored scene, or be faded out into a white, black or colored scene during mixing. It is also possible to color the keying signal of the external key.

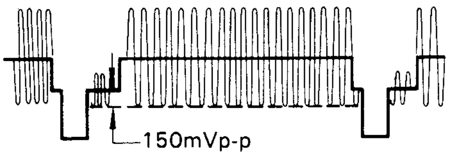


Turn to change the hue.

Tilt to adjust the chroma level.

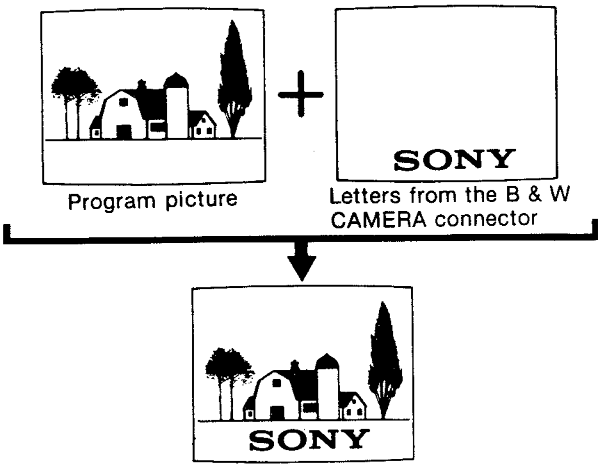
Turn to adjust the luminance. (If you turn fully clockwise then turn back a little, optimum brightness will be obtained.)

CAUTION
When using highly saturated color matting, check (on a waveform monitor) that the chroma level does not fall below the value shown in the illustration. If the LUM control is turned counterclockwise with the chroma level high, picture fluctuation may occur on the equipment connected to the SEG-2000A.



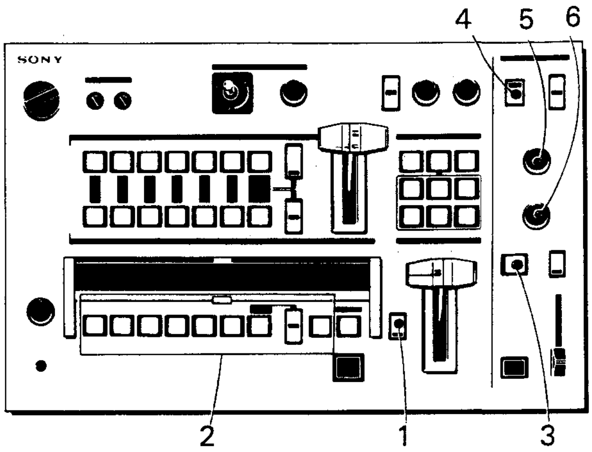
DOWNSTREAM KEYER

Monochrome letters or pattern from the B & W CAMERA connector can be inserted into the program or preset picture.


Program picture
SONY
Letters from the B & W CAMERA connector
SONY

Preparations

Adjust the letters to be inserted by monitoring the preset picture.

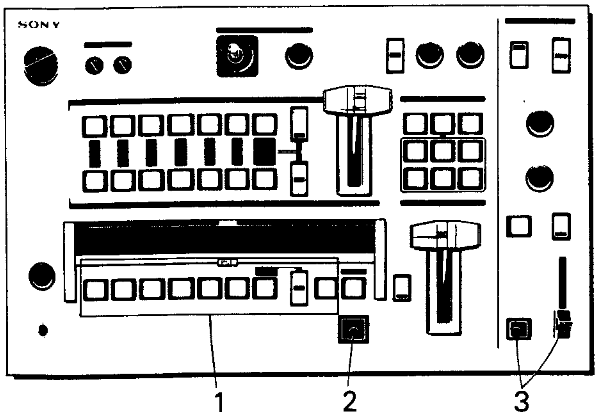


1. Set the PGM/PST switch to PST.
2. Select the picture on which the letters are inserted by pressing the appropriate PST bus button.
3. Press the PST CUT IN/OUT button, and the button will light.
4. Set the NORMAL/INVERT switch appropriately: To insert the black letters against a white background, set to NORMAL; to insert the white letters against a black background, set to INVERT.
5. Turn the KEY LEVEL control so that the letters to be inserted appear clearly.
6. Turn the INSERT LEVEL control to adjust the brightness of the letters to be inserted. Clockwise rotation gives a brighter picture.

Note
If the AUX input is selected on either of the PST bus line or the PGM bus line, the letters cannot be inserted in the preset picture. Because the keying signal is synchronized with the program picture, the preset picture, which is not synchronized with the program picture, will be unstable if the keying signal is inserted.
When both PST and PGM bus lines select the AUX input, the letters can be inserted into the preset picture.

To insert the letters on the program picture

Once you adjust the keying signal by monitoring the preset picture, insert the keying signal into the program picture as follows.

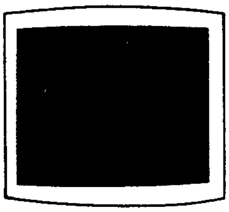


1. Select a picture on which the keying signal is inserted by pressing the appropriate PST bus button.
2. Press the TAKE button. The picture selected in Step 1 will be output as a program picture.
3. **To insert the keying signal with cut-in mode,** press the PGM CUT IN/OUT button. The button will light.
   To insert the signal with the fade-in mode (gradually), move the INSERT lever from the PGM side to the INSERT side. The PGM CUT IN/OUT button will light.

To remove the inserted signal quickly (the cut-out mode), press the PGM CUT IN/OUT button. The light of the button goes out.
To remove the inserted signal gradually (the fade-out mode), move the INSERT lever from the INSERT side to the PGM side. The light of the PGM CUT IN/OUT button goes out.

Where letters can be inserted

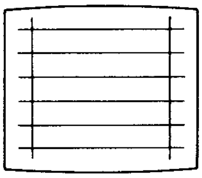
Shoot a white paper with the black and white camera for the downstream keyer and set the NORMAL/INVERT switch to INVERT.
Turn the KEY LEVEL control until the white paper appears on the monitor screen. You can insert the letters within this area.



- The pattern of the phase indicator is a guide to the area where you can enter letters.

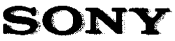
For a guide to positioning letters

1. Set the PGM/PST switch to PST.
2. Press the PST CUT IN/OUT button. The button will light.
3. Set the PHASE INDICATION switch to ON. The following pattern will appear on the preset monitor. Position the letters while referring to the vertical and horizontal lines.



Shadow effects

The addition of shadows may make the display of letters more effective, especially when inserting white letters or figures into a light picture.
Set the SHADOW switch to the appropriate position. To obtain a wide shadow, set the switch to WIDE ; to obtain a narrow shadow, set it to NARROW. We recommend using the NARROW position for adding shadows to small or thin letters.

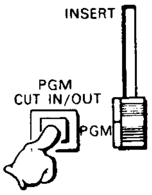


shodow effect.

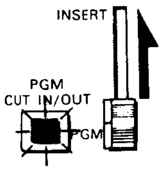
Combining the cut-in/out and fade-in/out operations

The PGM CUT IN/OUT button and the INSERT lever can be used together so that the following operations are possible.

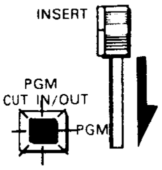
Cut-in/fade-out

1.

INSERT
PGM
CUT IN/OUT
PGM

The letters will be cut in.
- The PGM CUT IN/OUT button light.

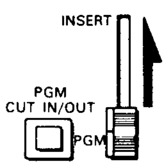
2.

INSERT
PGM
CUT IN/OUT
PGM

The picture does not change.

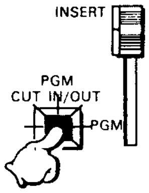
3.

INSERT
PGM
CUT IN/OUT
PGM

The inserted letters will be faded out.
- When the lever is moved to the PGM position, the PGM CUT IN/OUT button will go out.

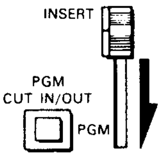
Fade-in/cut-out

1.

INSERT
PGM
CUT IN/OUT
PGM

The letters will be faded in.
- The PGM CUT IN/OUT button will light.

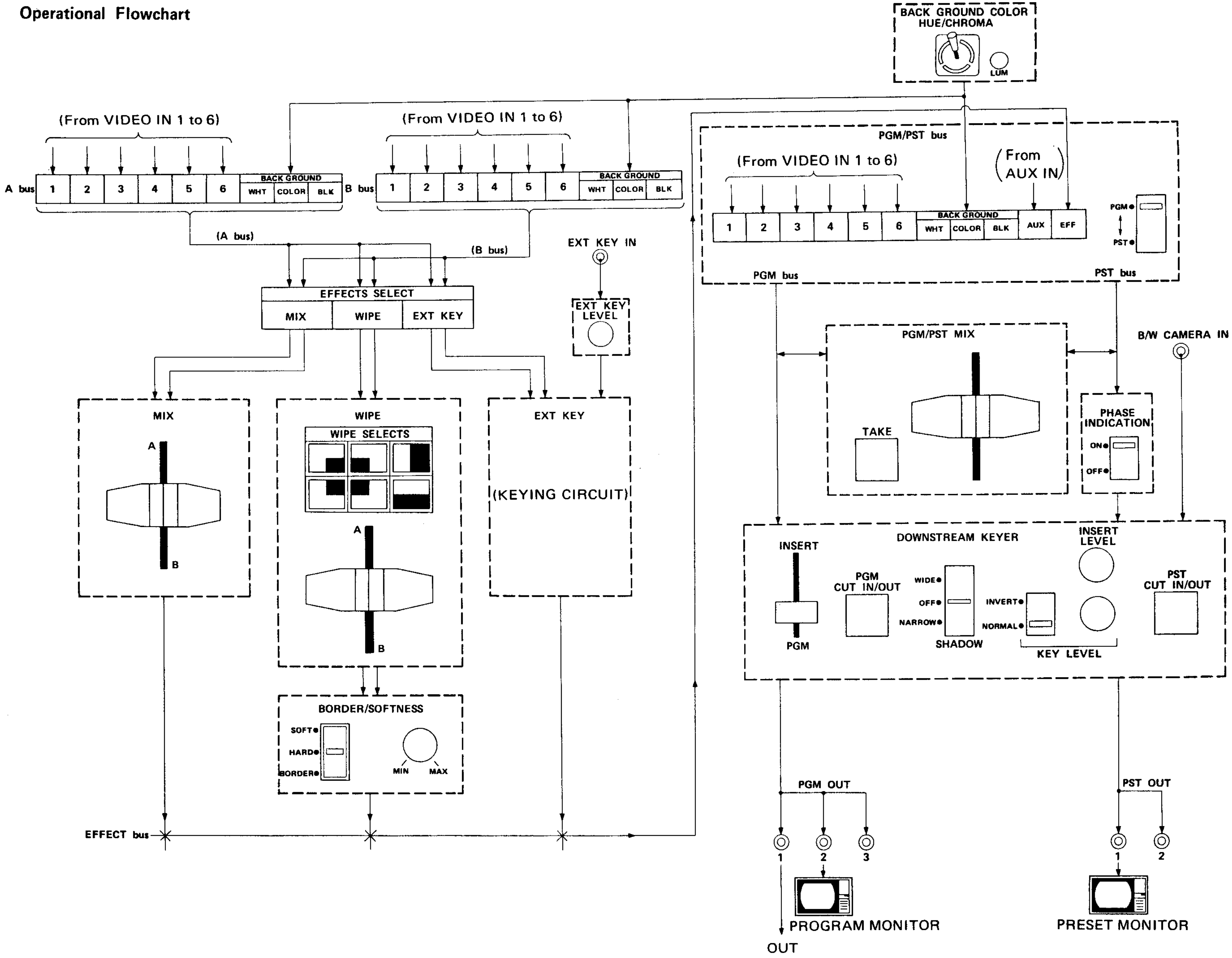
2.

INSERT
PGM
CUT IN/OUT
PGM

The inserted letters will be cut out.
- The light of the button will go out.

3.

INSERT
PGM
CUT IN/OUT
PGM

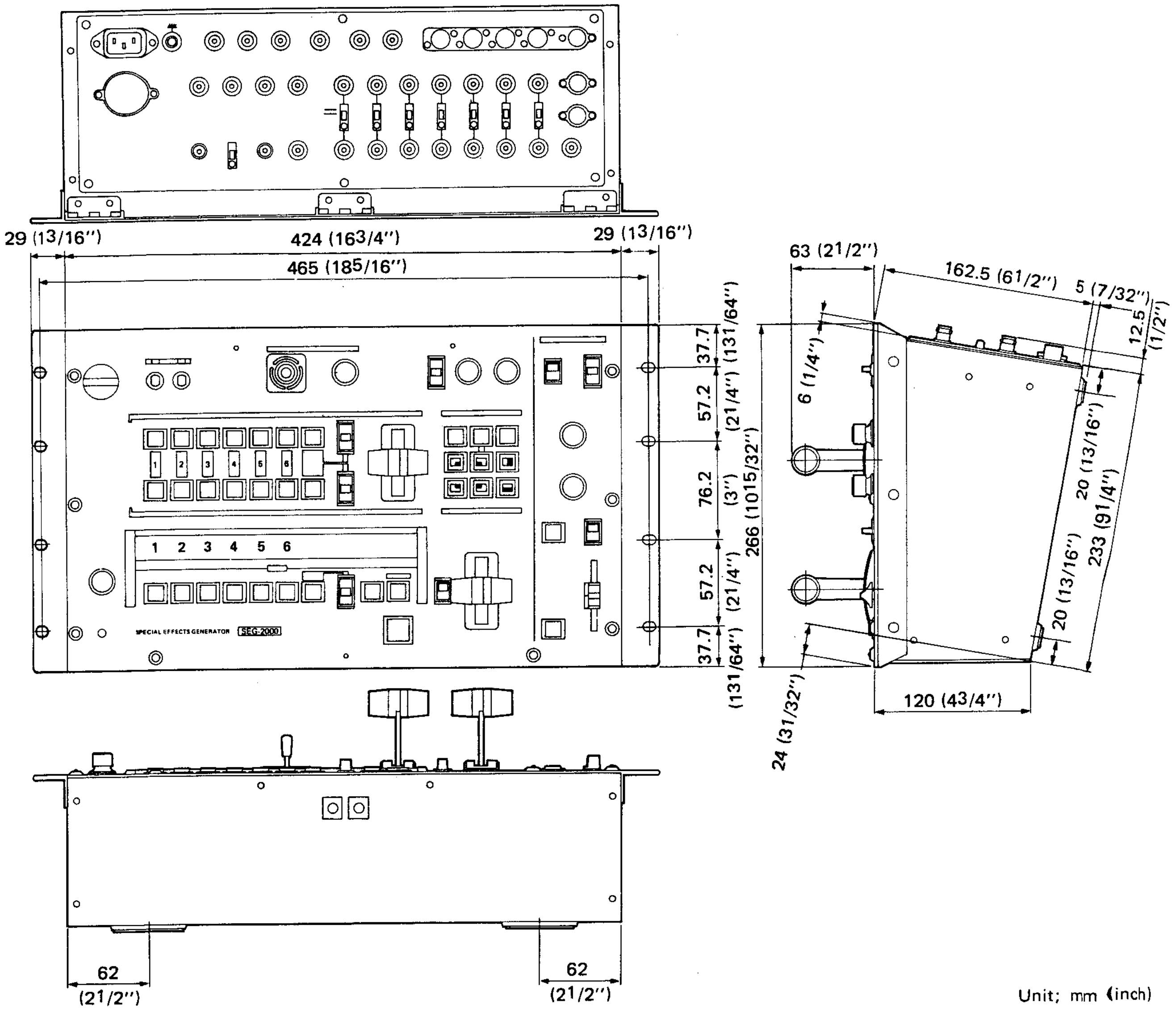
Return the lever to the PGM position.
The picture does not change.

Operational Flowchart


BACK GROUND COLOR
HUE/CHROMA
LUM
(From VIDEO IN 1 to 6)
A bus
1
2
3
4
5
6
BACK GROUND
WHT
COLOR
BLK
(From VIDEO IN 1 to 6)
B bus
(A bus)
(B bus)
EFFECTS SELECT
MIX
WIPE
EXT KEY
EXT KEY IN
EXT KEY LEVEL
MIX
A
B
WIPE
WIPE SELECTS
EXT KEY
(KEYING CIRCUIT)
BORDER/SOFTNESS
SOFT●
HARD●
BORDER●
MIN
MAX
EFFECT bus
PGM/PST bus
(From VIDEO IN 1 to 6)
(From AUX IN)
AUX
EFF
PGM●
PST●
PGM bus
PST bus
PGM/PST MIX
TAKE
B/W CAMERA IN
PHASE INDICATION
ON●
OFF●
DOWNSTREAM KEYER
INSERT
PGM
PGM CUT IN/OUT
WIDE●
OFF●
NARROW●
SHADOW
INVERT●
NORMAL●
INSERT LEVEL
KEY LEVEL
PST CUT IN/OUT
PGM OUT
PST OUT
PROGRAM MONITOR
PRESET MONITOR
OUT

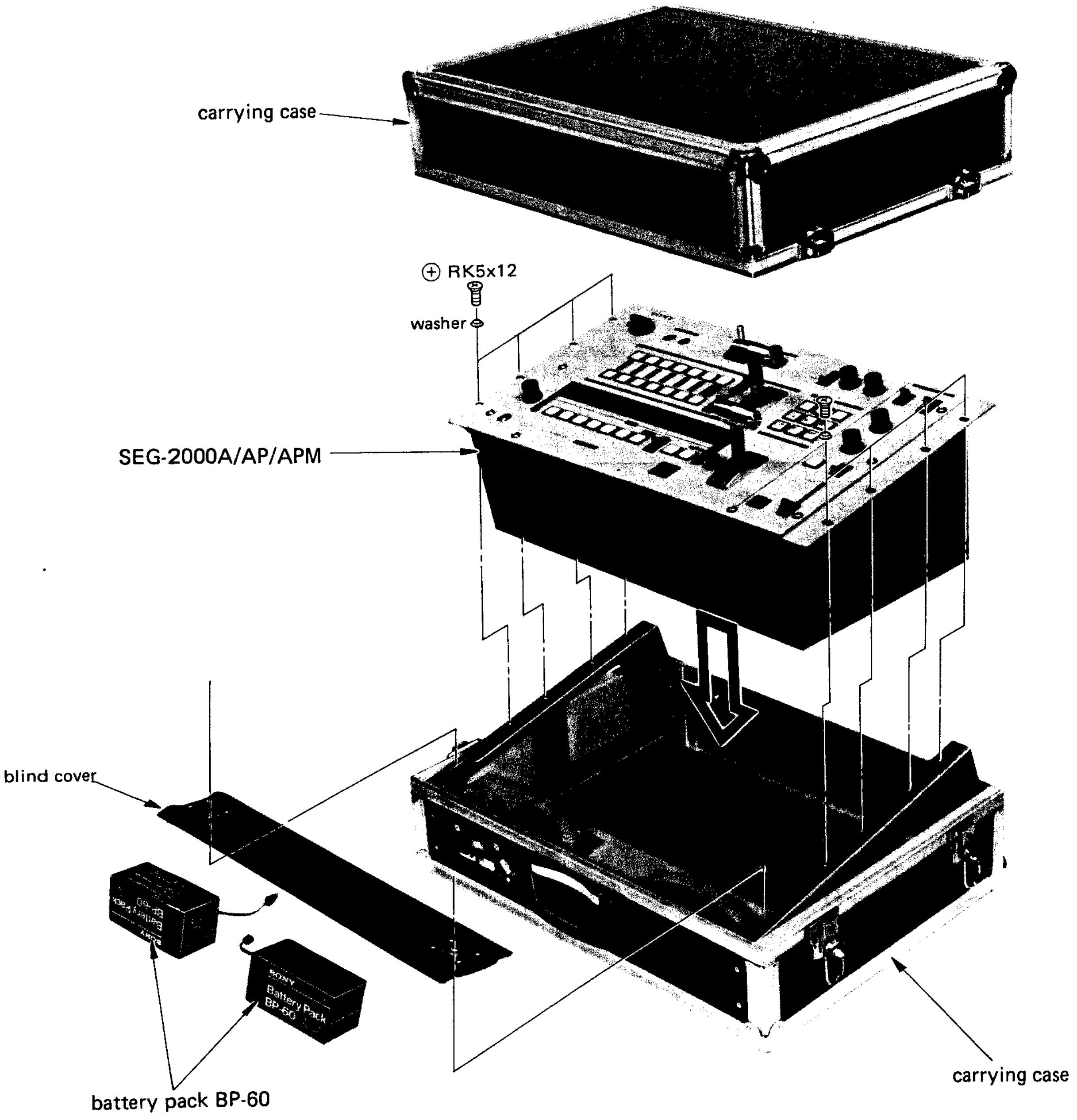
1-7. INSTALLMENT TO CARRYING CASE

1-7-1. Dimensions


29 (1 3/16")
424 (16 3/4")
29 (1 3/16")
465 (18 5/16")
1 2 3 4 5 6
SPECIAL EFFECTS GENERATOR SEG-2000
37.7 (1 31/64")
57.2 (2 1/4")
76.2 (3")
57.2 (2 1/4")
37.7 (1 31/64")
266 (10 15/32")
63 (2 1/2")
162.5 (6 1/2")
5 (7/32")
12.5 (1/2")
6 (1/4")
20 (13/16")
233 (9 1/4")
20 (13/16")
24 (31/32")
120 (4 3/4")
62 (2 1/2")
62 (2 1/2")

Unit; mm (inch)

1-7-2. Installment to Carrying Case of the LC-2006 (Optional)

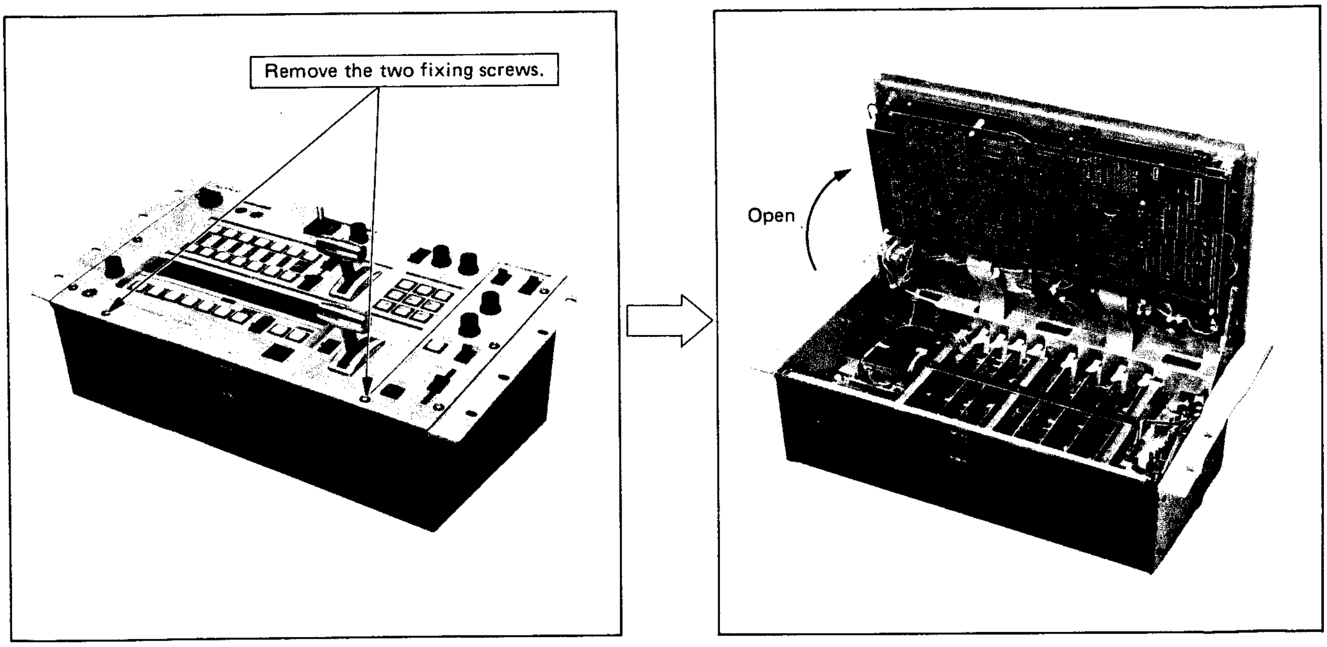

carrying case
⊕ RK5x12
washer
SEG-2000A/AP/APM
blind cover
battery pack BP-60
carrying case

SECTION 2
CAUTION AND OTHER INFORMATION

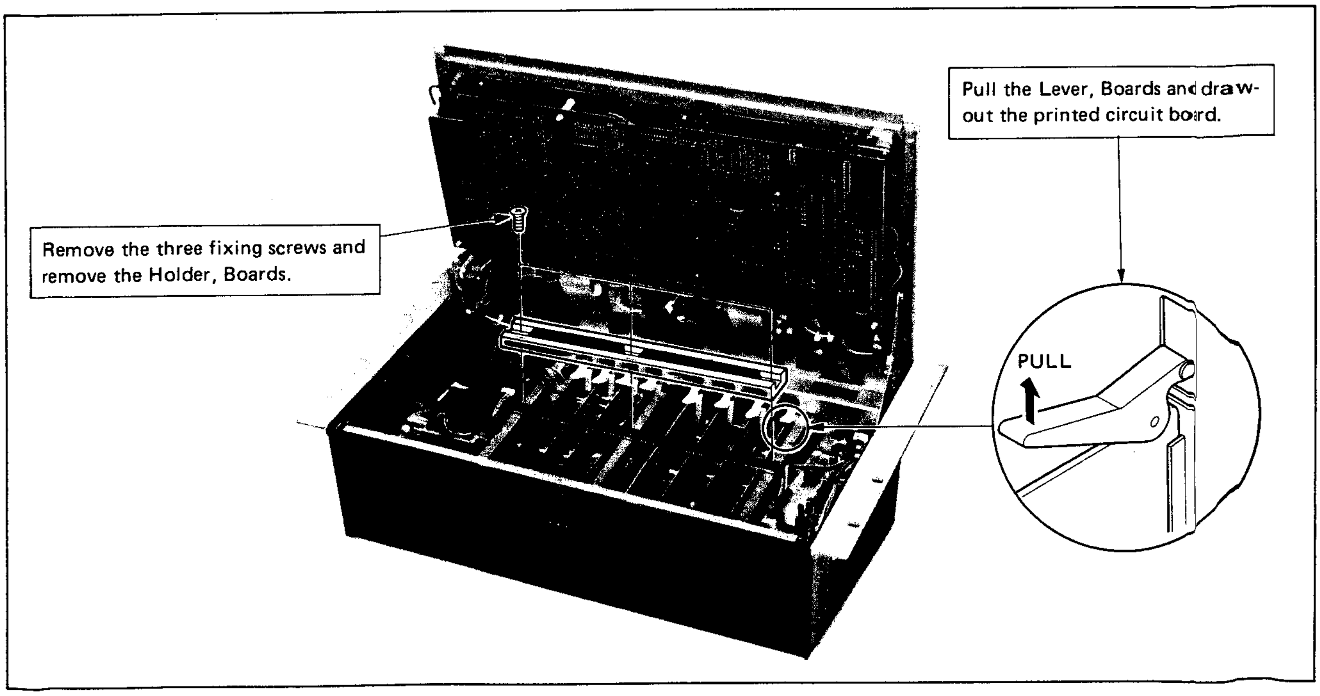
2-1. NOTES ON SERVICING

- Most of the maintenance of the SEG-2000A/AP/APM can be done without removing it from the console.
- When an inside repair or adjustment of the machine is required, the printed circuit boards can be checked by opening the control panel block as follows.

2-1-1. Removal of Control Panel Block


Remove the two fixing screws.

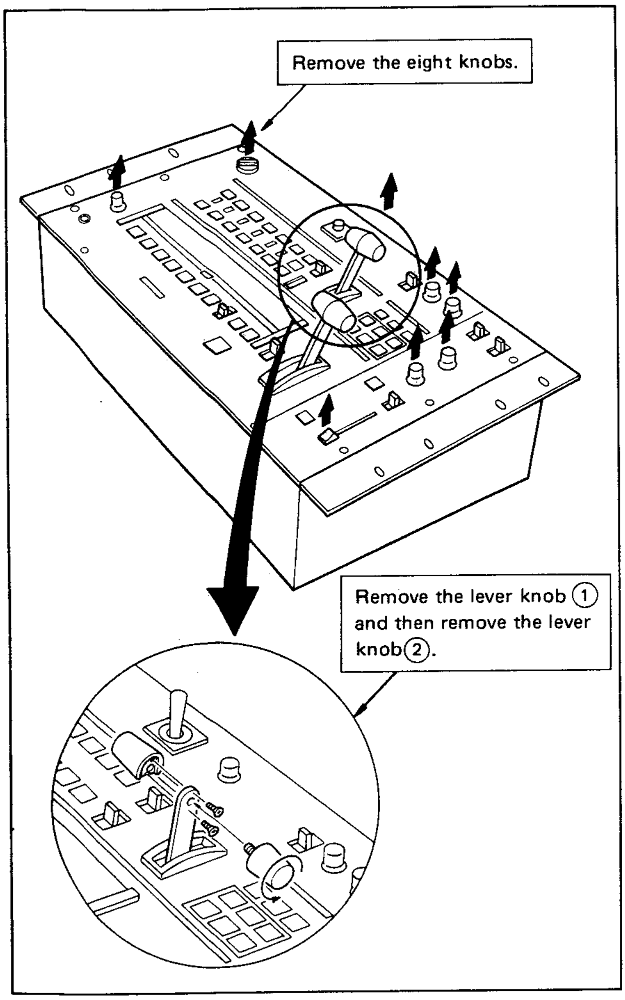
2-1-2. Removal of Printed Circuit Boards for Special Effect


Pull the Lever, Boards and draw-out the printed circuit board.

Remove the three fixing screws and remove the Holder, Boards.

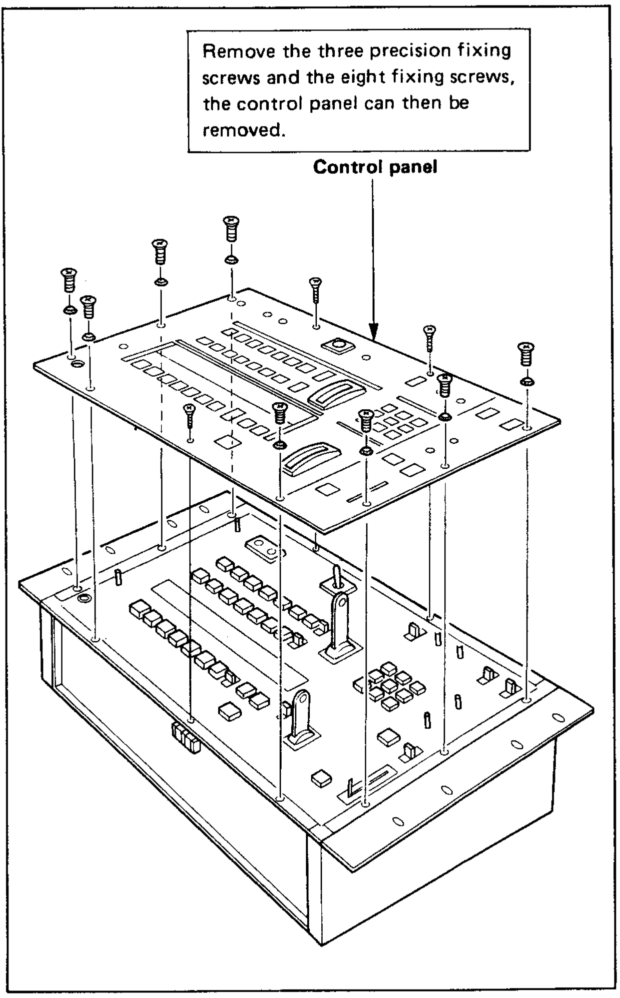
2-2. DISASSEMBLY OF CABINET

2-2-1. Removal of Control Panel



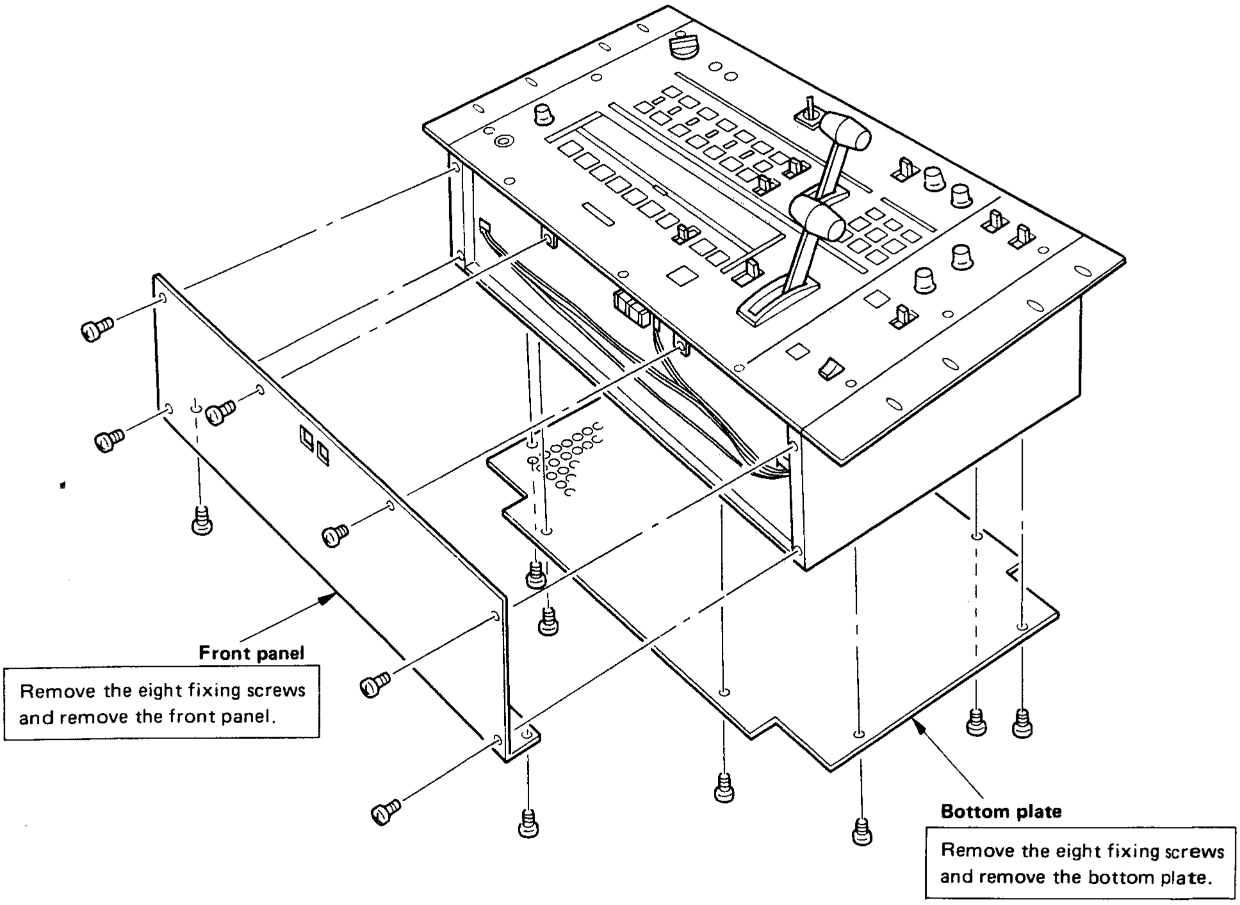
Remove the eight knobs.

Remove the lever knob ① and then remove the lever knob②.



Remove the three precision fixing screws and the eight fixing screws, the control panel can then be removed.

2-2-2. Removal of Front Panel and Bottom Plate



Front panel

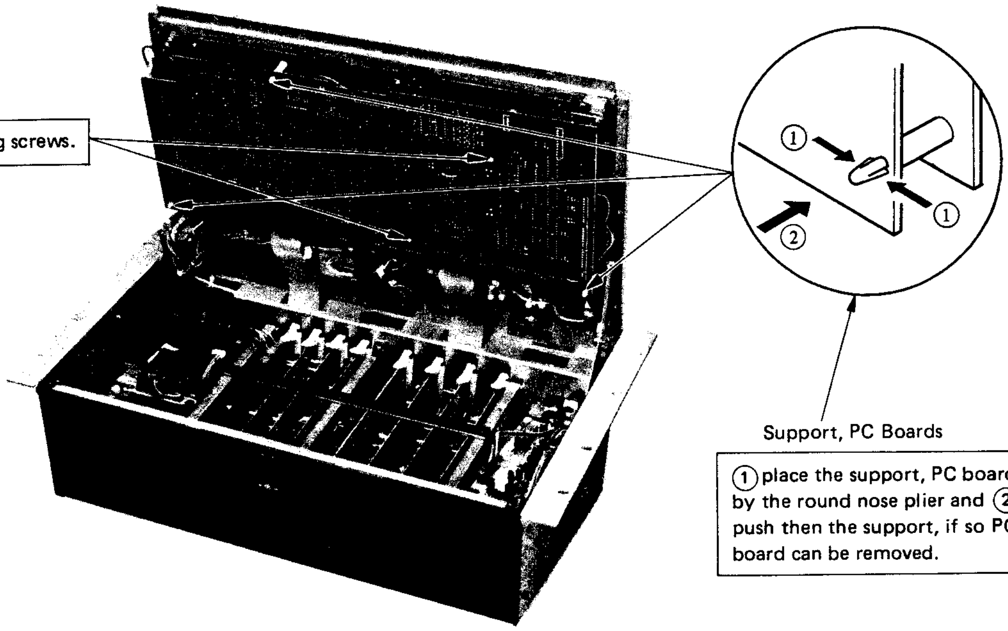
Remove the eight fixing screws and remove the front panel.

Bottom plate

Remove the eight fixing screws and remove the bottom plate.

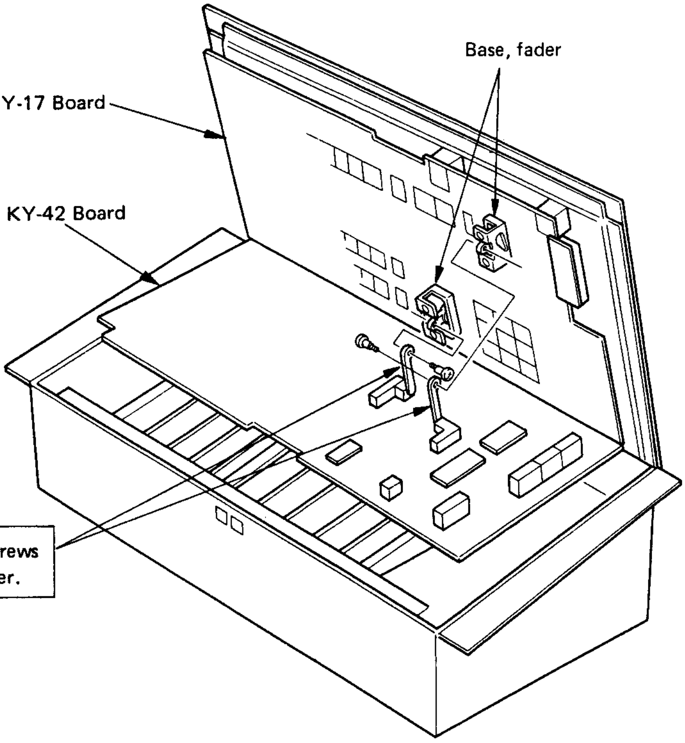
2-3. REMOVAL OF CONTROL SYSTEM BOARDS

2-3-1. Removal of KY-42 Board


①
①
②
Support, PC Boards

Remove the two fixing screws.

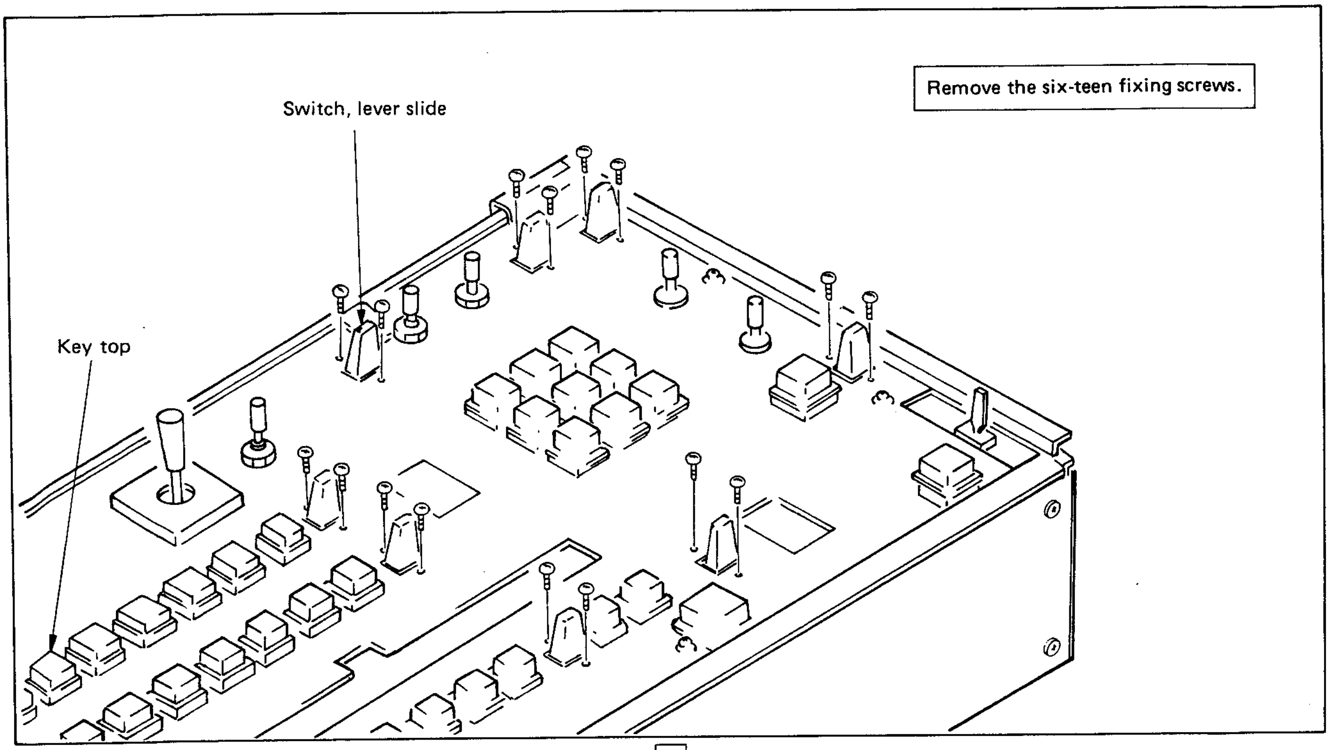
①place the support, PC boards by the round nose plier and ② push then the support, if so PC board can be removed.

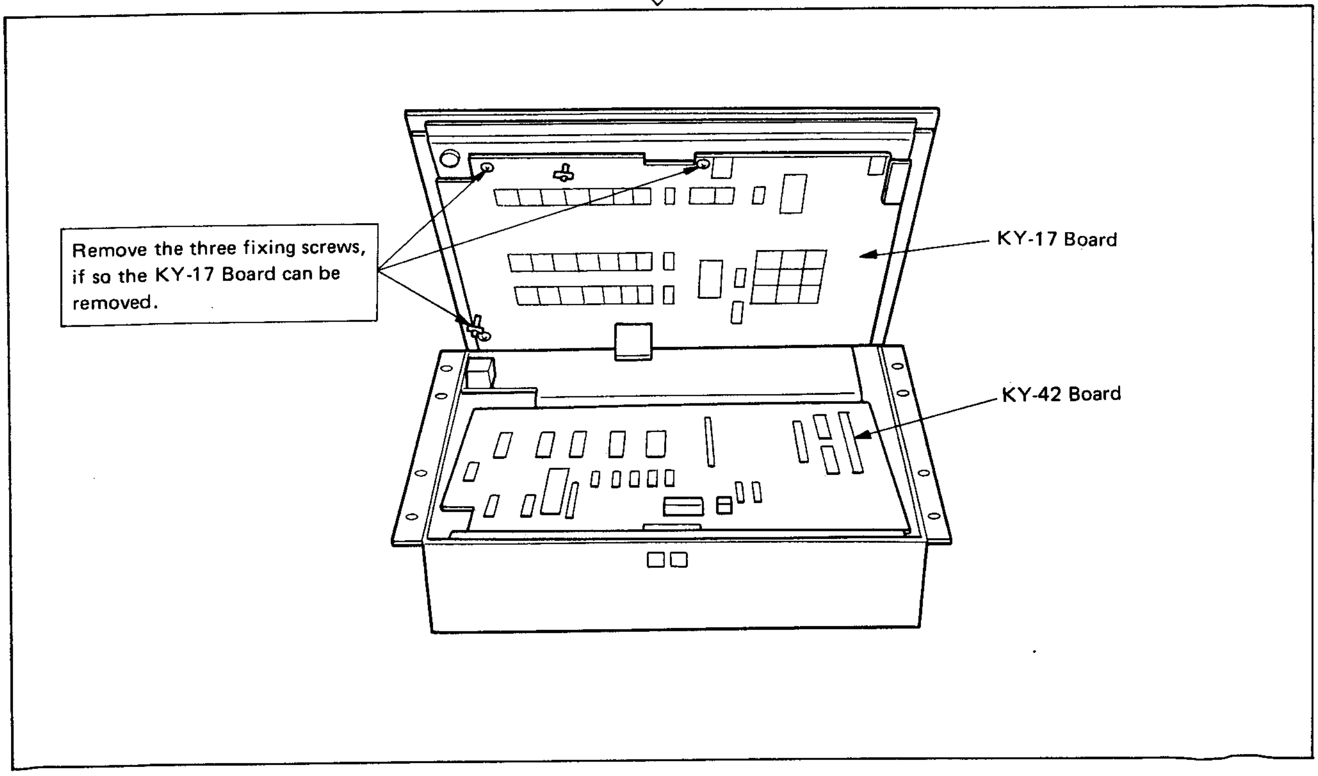

Base, fader
KY-17 Board
KY-42 Board
Lever, fader

Remove the two fixing screws and remove the lever, fader.

2-3-2. Removal of KY-17 Board

Note: Perform the sec. 2-2-1, Removal of Control Panel and the sec. 2-3-1, Removal of KY-42 board before removing this.

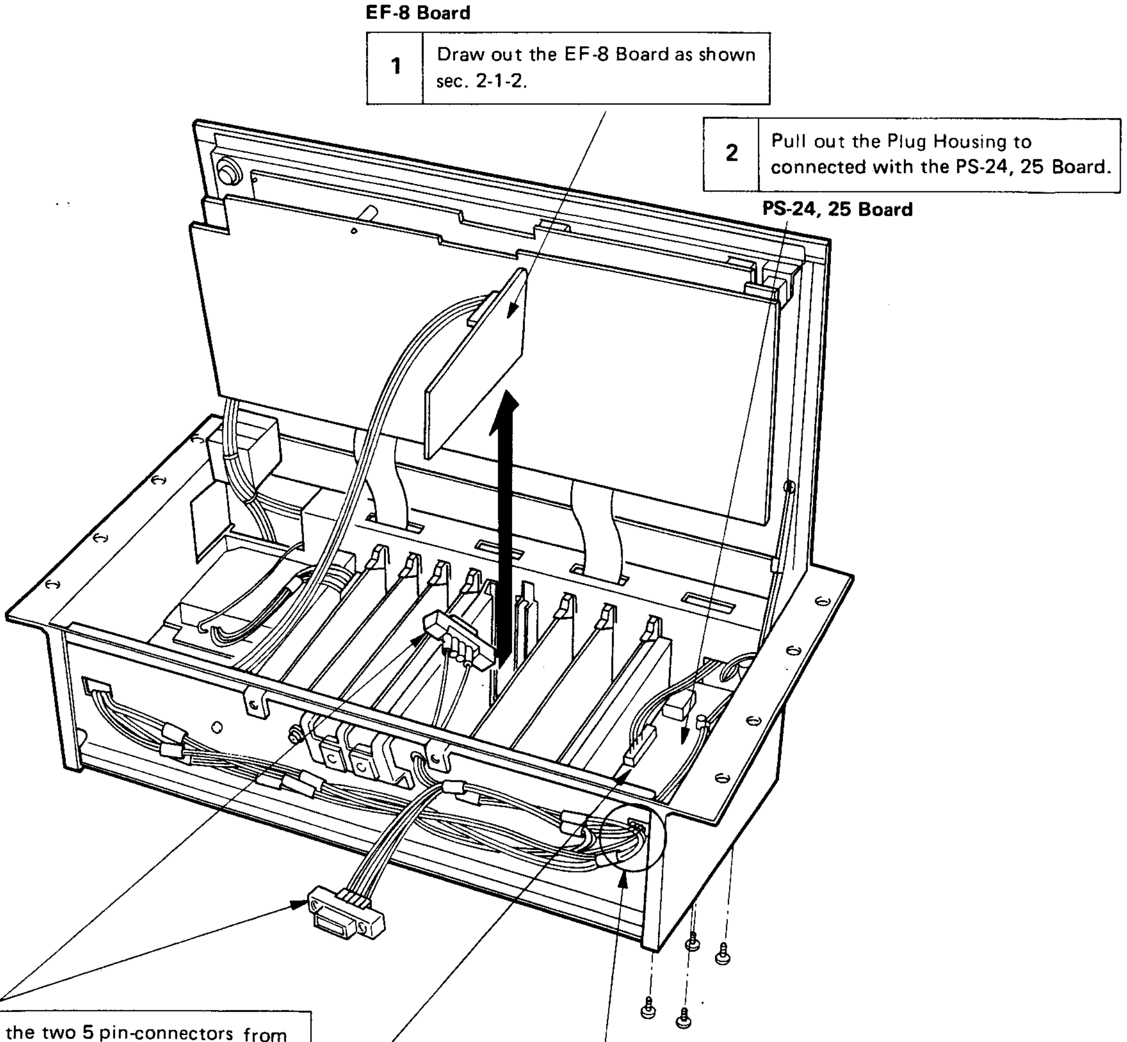

Remove the six-teen fixing screws.
Switch, lever slide
Key top


Remove the three fixing screws, if so the KY-17 Board can be removed.
KY-17 Board
KY-42 Board

2-3-3. Removal of Switching Regulator

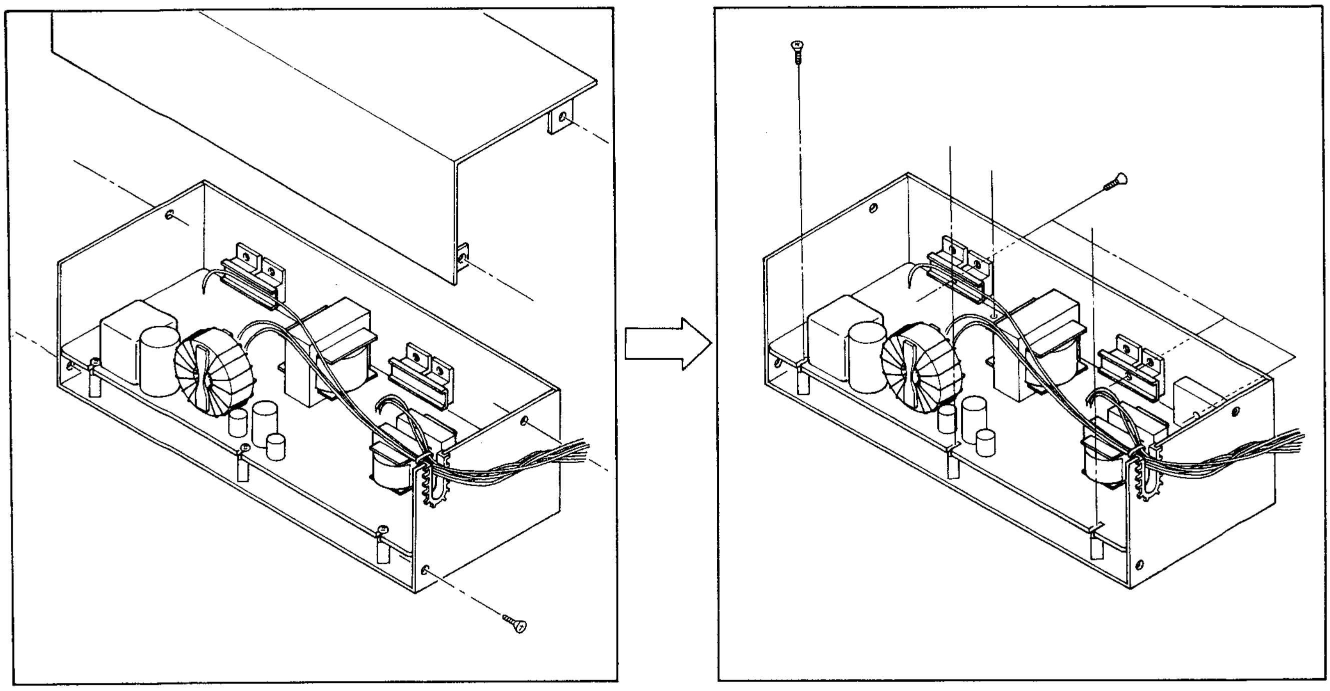
Note: Perform the sec. 2-2-2, Removal of Front Panel and Bottom Plate before removing this.

Step 1. Removal of the Box, Switching regulator



1	Draw out the EF-8 Board as shown sec. 2-1-2.
2	Pull out the Plug Housing to connected with the PS-24, 25 Board.
3	Pull out the two 5 pin-connectors from inside of SEG-2000A/AP/APM to outside.
4	Pull out the wire from inside of SEG-2000A/AP/APM to outside.
5	Remove the four fixing screws of the box, switching regulator and remove it to first lifting its front.

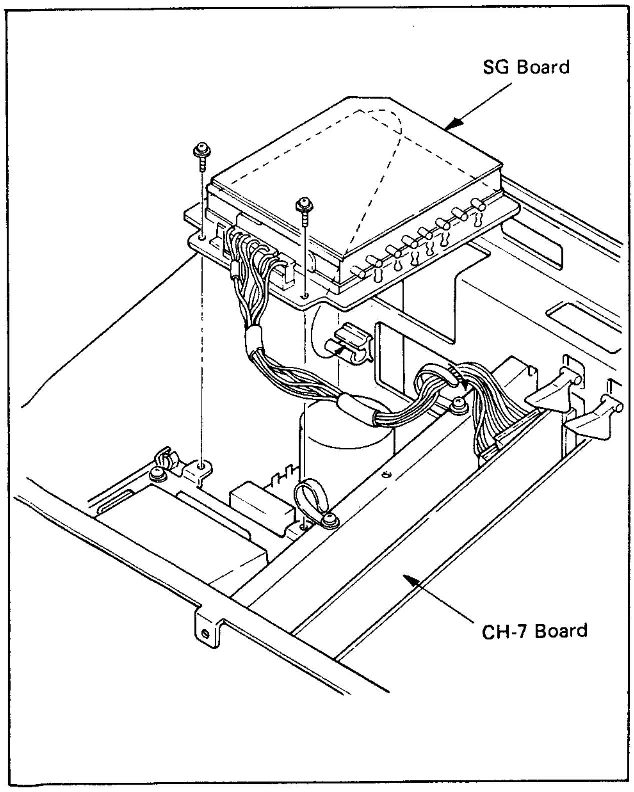
Step 2. Removal of the switching regulator



Remove the four fixing screws and remove the cover of the Box.

Remove the four fixing screws of the PC Board and the three fixing screws of the heat sink.

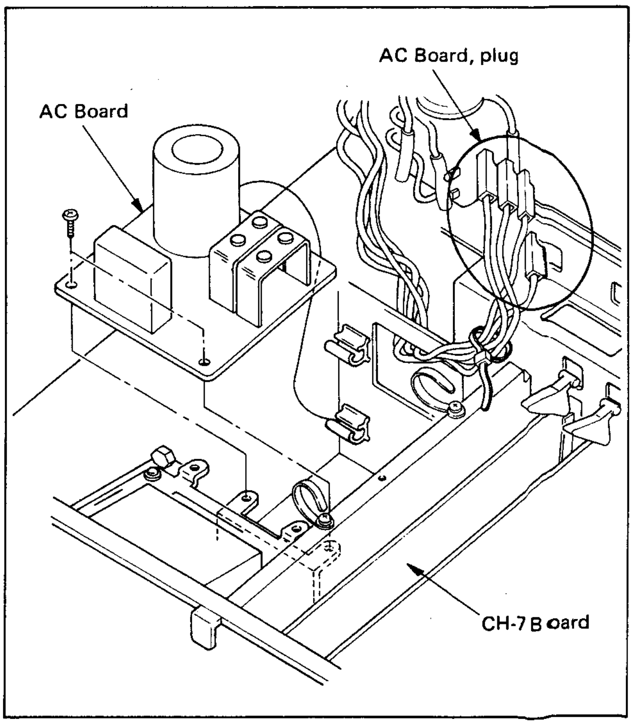
2-3-4. Removal of SG Board



Remove the two fixing screws and then the SG Board can be removed.

2-3-5. Removal of AC Board

Note: Perform the sec. 2-3-4, Removal of SG Board before removing this.

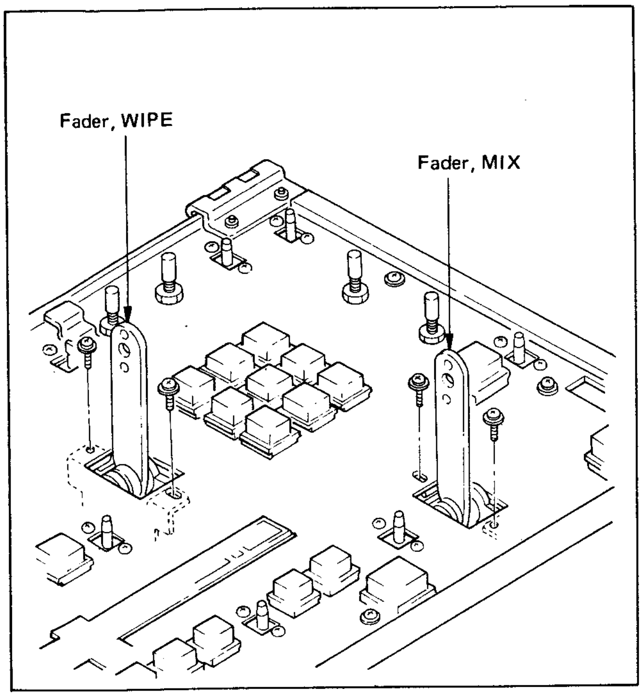


Remove the two fixing screws and then the AC Board can be removed.

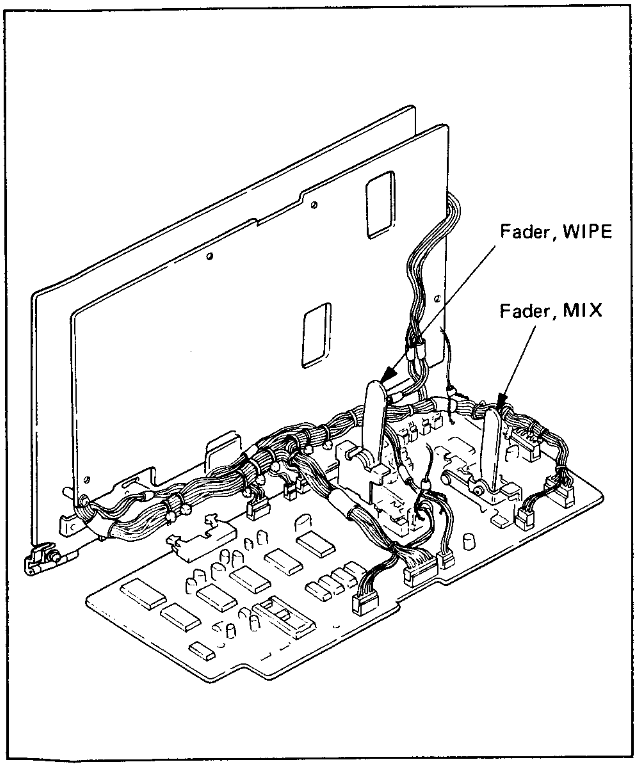
2-4. "FADER" TORQUE ADJUSTMENT

Step 1. Remove the control panel as shown the sec. 2-2-1.

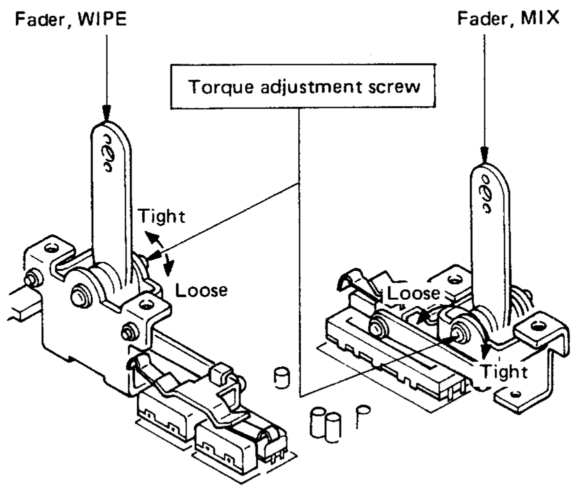
Step 2. Remove the two fixing screws of the WIPE fader and the MIX fader.


Fader, WIPE
Fader, MIX

Step 3. Remove the KY-42 Board as shown the sec. 2-3-1.

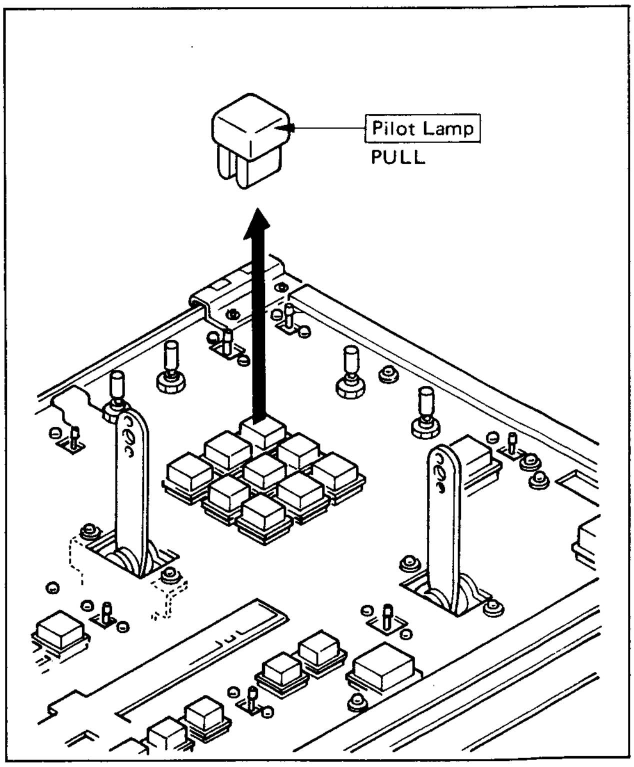

Fader, WIPE
Fader, MIX

Step 4. Torque Adjustment


Fader, WIPE
Fader, MIX
Torque adjustment screw
Tight
Loose
Loose
Tight

[When the movement of fader is light]
Turn the adjustment screw to clockwise.
[When the movement of fader is heavy]
Turn the adjustment screw to counterclockwise.

2-5. REPLACEMENT OF PILOT LAMP


Pilot Lamp
PULL

SECTION 3
POWER SUPPLY ALIGNMENT

3-1. DC VOLTAGE ADJUSTMENT

Note: Perform this adjustment after SYNC signal is supplied to the machine.

3-1-1. REG 14V Adjustment

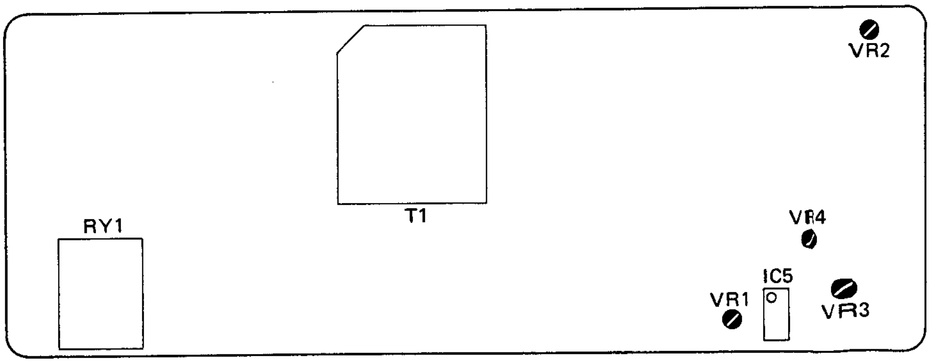
machine condition for adjustment	measuring point	adjustment
	Q6-corrector/ KY-42 board, 14.0 V ± 0.05 Vdc	⊘ VR4/PS-36

3-1-2. REG 9V Adjustment

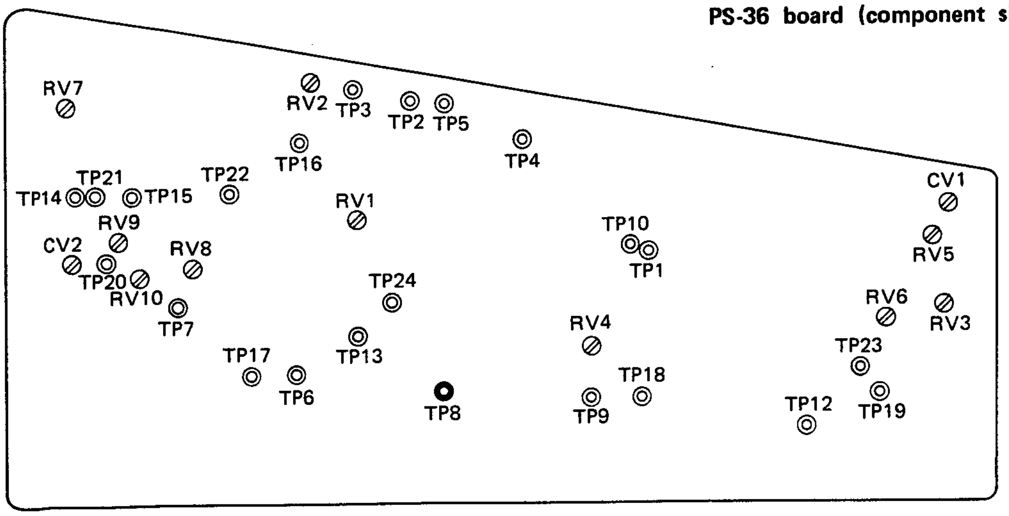
machine condition for adjustment	measuring point	adjustment
	IC5-8pin/ PS-36, 10.5 V ~ 11.0 Vdc	⊘ VR1(B)/PS-36 ⊘ VR3/PS-36

3-1-3. REG –5V Adjustment

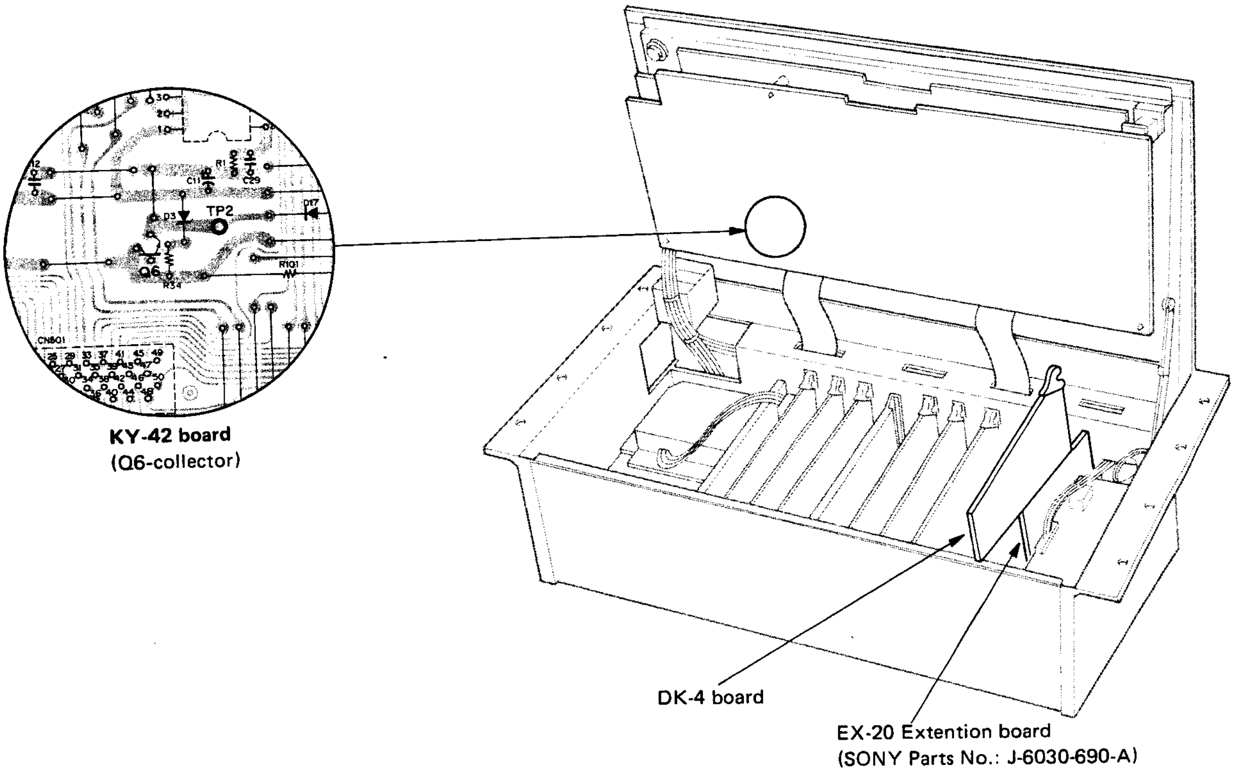
machine condition for adjustment	measuring point	adjustment
	TP8/DK-4 board, –5.0 V ± 0.05 Vdc	⊘ VR2(A)/PS-36


VR2
T1
RY1
VR4
IC5
VR1
VR3

PS-36 board (component side)

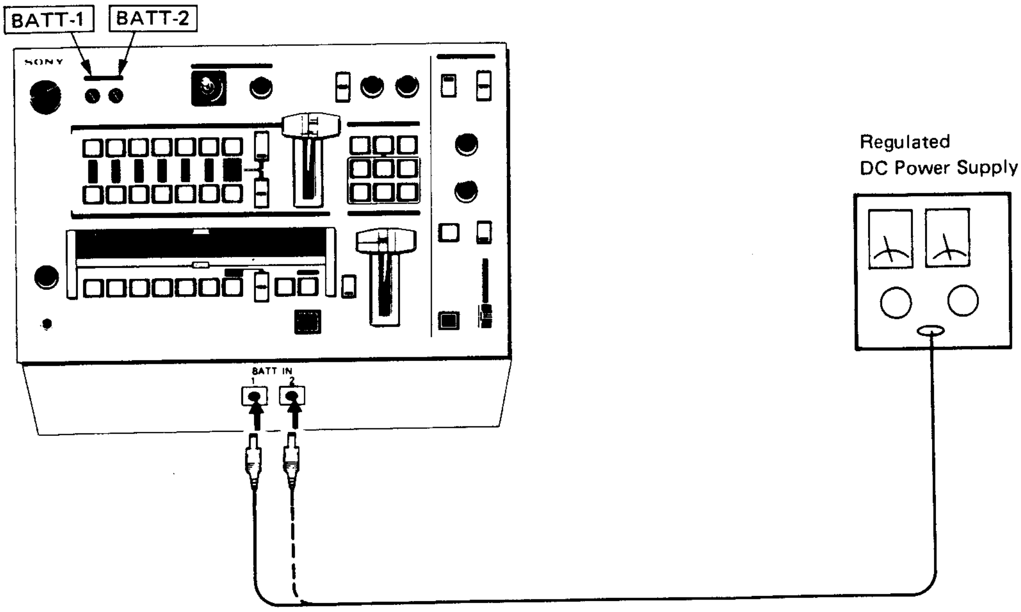

RV7
RV2
TP3
TP2
TP5
TP16
TP4
TP21
TP22
TP14
TP15
RV1
CV1
RV9
TP10
CV2
RV8
RV5
TP1
TP20
TP24
RV10
RV6
TP7
RV3
RV4
TP23
TP17
TP13
TP18
TP6
TP8
TP9
TP12
TP19

DK-4 board (component side)


TP2
D3
Q6
R34
C11
R1
C29
D17
R101
CN801
KY-42 board
(Q6-collector)
DK-4 board
EX-20 Extention board
(SONY Parts No.: J-6030-690-A)

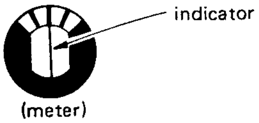
3-2. BATTERY SHUT-OFF ADJUSTMENT

[Equipment & Connection]

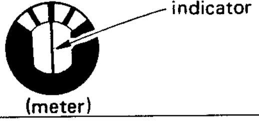

BATT-1
BATT-2
SONY
BATT IN
1
2
Regulated
DC Power Supply

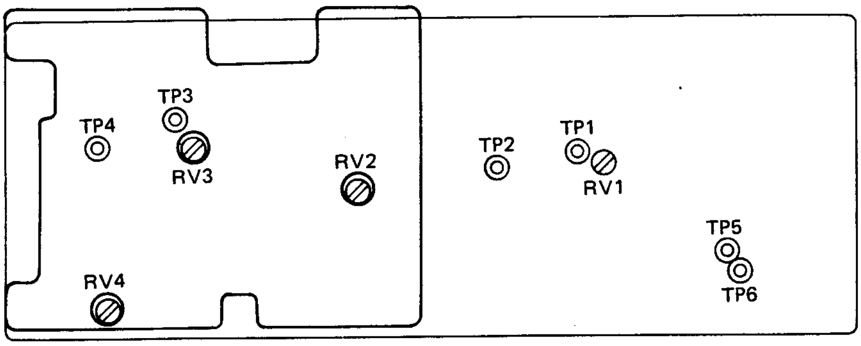
Note: Two plugs should not be connected to BATT IN 1 and 2 at the same time.

3-2-1. BATT-1 Shut-off Adjustment

machine condition for adjustment	measuring point	adjustment
• POWER switch; BATT • BATT IN-1; 12.0 V ± 0.05 Vdc	1. Level meter adjustment 	⊘ RV2/PS-25
• POWER switch; BATT • BATT IN-1; 10.8 V ~ 10.85 Vdc	2. OFF voltage adjustment Be sure that the LED of BATT-1 put out light between 10.8 Vdc and 10.85 Vdc.	⊘ RV1/PS-25 Once turn the ⊘ RV1 to fully clockwise, and gradually turn it to fully counterclockwise.

3-2-2. BATT-2 Shut-off Adjustment

machine condition for adjustment	measuring point	adjustment
• POWER switch; BATT • BATT IN-2; 12.0 V ± 0.05 Vdc	1. Level meter adjustment 	⊘ RV4/PS-25
• POWER switch; BATT • BATT IN-2; 10.8 V ~ 10.85 Vdc	2. OFF voltage adjustment Be sure that the LED of BATT-1 put out light between 10.8 Vdc and 10.85 Vdc.	⊘ RV3/PS-25 Once turn ⊘ RV1 to fully clockwise, and gradually turn it to fully counterclockwise.

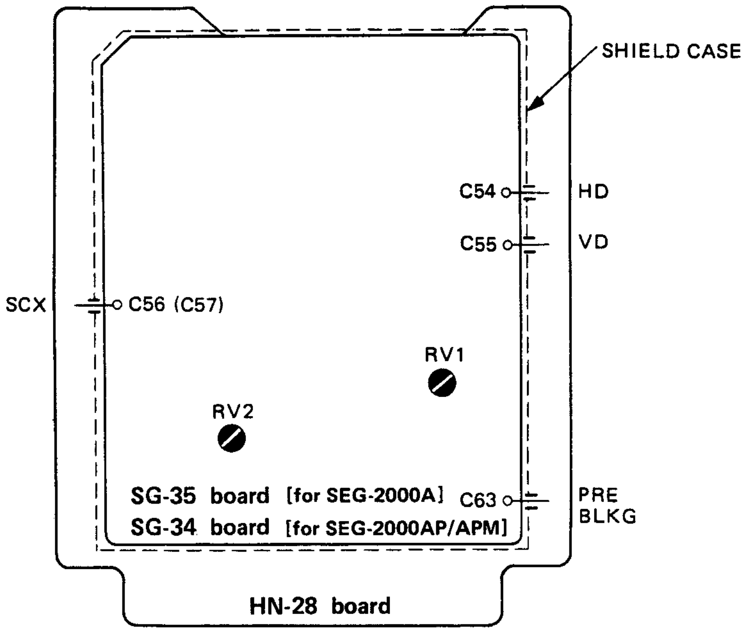


PS-24, PS-25 board (component side)

SECTION 4
SYNC GENERATOR ALIGNMENT

[Equipment Required]

- Frequency countor
- Dual oscilloscope

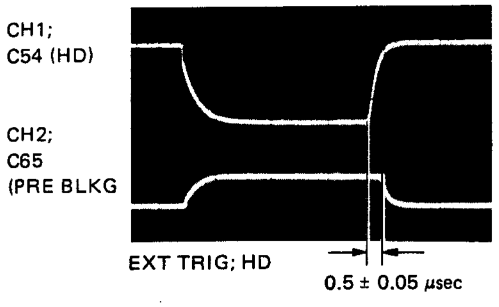

SHIELD CASE
C54
HD
C55
VD
SCX
C56 (C57)
RV1
RV2
SG-35 board [for SEG-2000A]
SG-34 board [for SEG-2000AP/APM]
C63
PRE BLKG
HN-28 board

( ); SEG-2000A/AP/APM

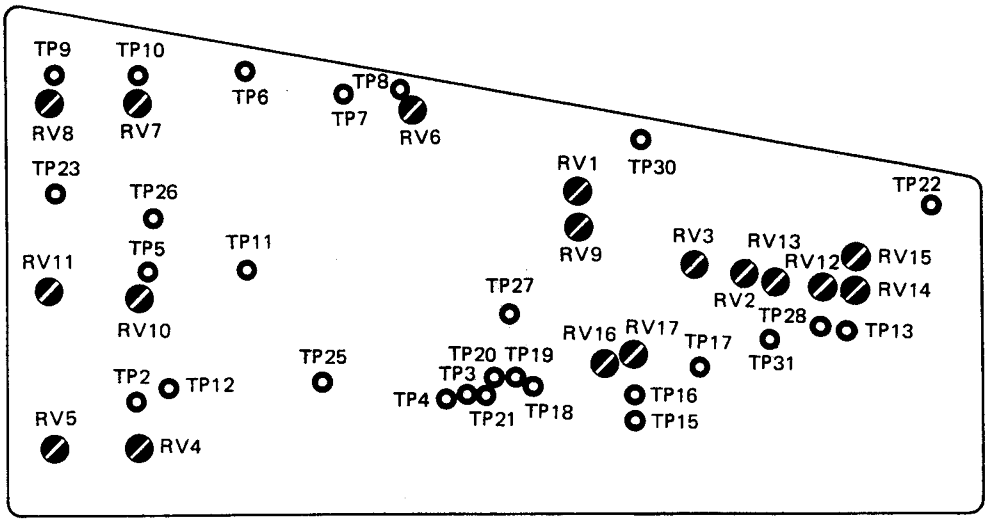
4-1. SUB-CARRIER FREQUENCY ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	[for SEG-2000A] C56 (GND; shield case)/SG-35 3,579,545 Hz ± 10 Hz	⊘ RV1/SG-35
	[for SEG-2000AP/APM] C57 (GND; shield case)/SG-34 4,433,618 Hz ± 10 Hz (PAL) 3,575,611 Hz ± 10 Hz (PAL-M)	⊘ RV1/SG-34

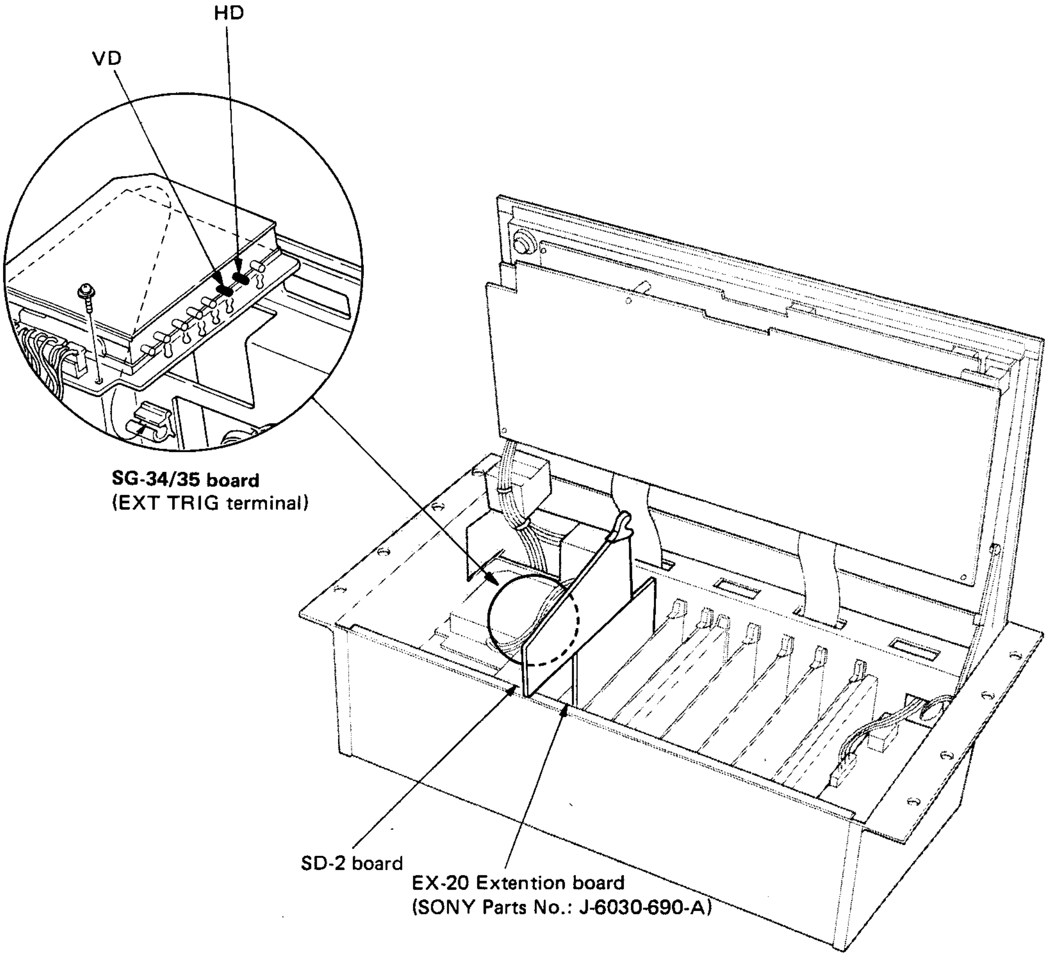
4-2. PRE BLKG WIDTH ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
		⊘ RV2/SG-35 or SG-34

SECTION 5
EFFECT CONTROL PULSE ALIGNMENT


TP9
TP10
TP6
TP8
TP7
RV8
RV7
RV6
TP30
RV1
TP23
TP26
TP22
RV9
TP11
RV3
RV13
TP5
RV11
RV12
RV15
RV2
RV14
TP27
TP28
TP13
RV10
RV16
RV17
TP17
TP31
TP25
TP20
TP19
TP3
TP2
TP12
TP4
TP16
TP21
TP18
TP15
RV5
RV4

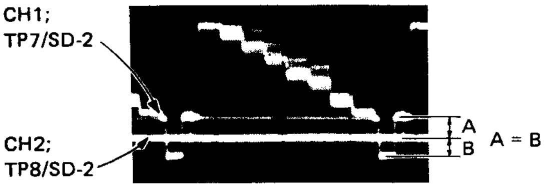
SD-2 board


HD
VD
SG-34/35 board
(EXT TRIG terminal)
SD-2 board
EX-20 Extention board
(SONY Parts No.: J-6030-690-A)

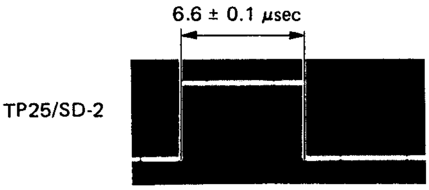
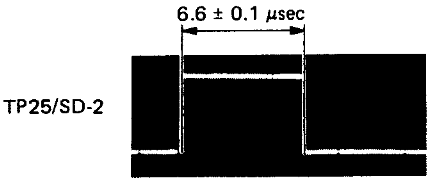
[Equipment Required]

- Dual trace oscilloscope
- SONY MD-1600/P/PM multisignal distributor or equivalent

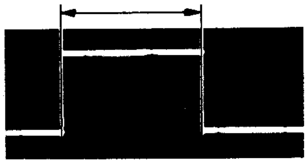
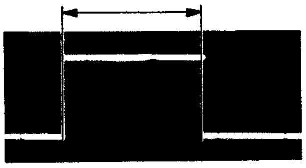
5-1. AUX SYNC LEVEL ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
• AUX IN; 75% color bar signal	 EXT TRIG; HD **Note:** Set the oscilloscope at "DC mode" and put together the "GND" of CH-1 and CH-2.	⊘RV6/SD-2

5-2. H SYNC PULSE WIDTH ADJUSTMENT

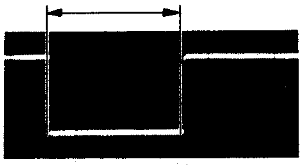
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM mode • AUX IN; 75% Color bar signal	1. INT H Sync Pulse Width Adjustment PGM BUS selector; Except "AUX"  EXT TRIG; HD	⊘RV2/SD-2
	2. EXT H Sync Pulse Width Adjustment PGM BUS selector; "AUX"  EXT TRIG; HD	⊘RV7/SD-2

5-3. V SYNC PULSE WIDTH ADJUSTMENT

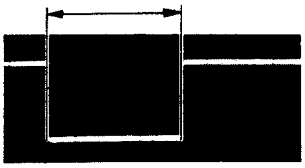
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM mode • AUX IN; 75% color bar signal	1. INT V Sync Pulse Width Adjustment PGM BUS selector; Except "AUX" 0.5 ± 0.04 msec TP26/SD-2  EXT TRIG; VD	⊘ RV4/SD-2
	2. EXT V Sync Pulse Width Adjustment PGM BUS selector; "AUX" 0.5 ± 0.04 msec TP26/SD-2  EXT TRIG; VD	

5-4. BLKG PULSE WIDTH ADJUSTMENT

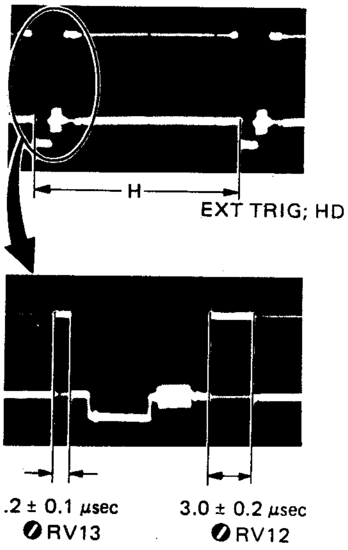
5-4-1. H PRE BLKG Pulse Width Adjustment

machine condition for adjustment	measuring point	adjustment
	7.0 ± 0.1 µsec [for SEG-2000A/APM] 8.8 ± 0.1 µsec [for SEG-2000AP] TP4/SD-2  EXT TRIG; HD	⊘ RV3/SD-2

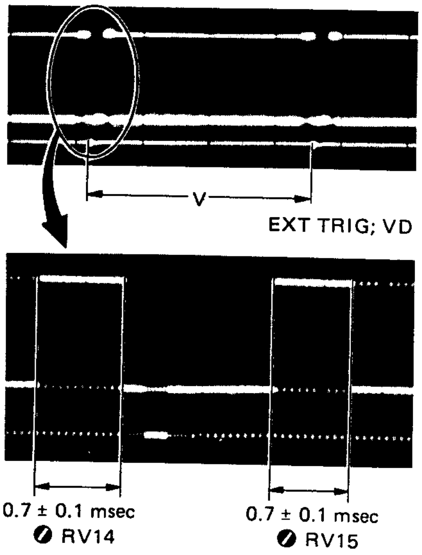
5-4-2. V PRE BLKG Pulse Width Adjustment

machine condition for adjustment	measuring point	adjustment
	0.94 ± 0.01 msec [for SEG-2000A] 1.24 ± 0.01 msec [for SEG-2000AP] 0.90 ± 0.01 msec [for SEG-2000APM] TP3/SD-2  EXT TRIG; VD	⊘ RV5/SD-2

5-4-3. DSK H BLKG Pulse Width Adjustment

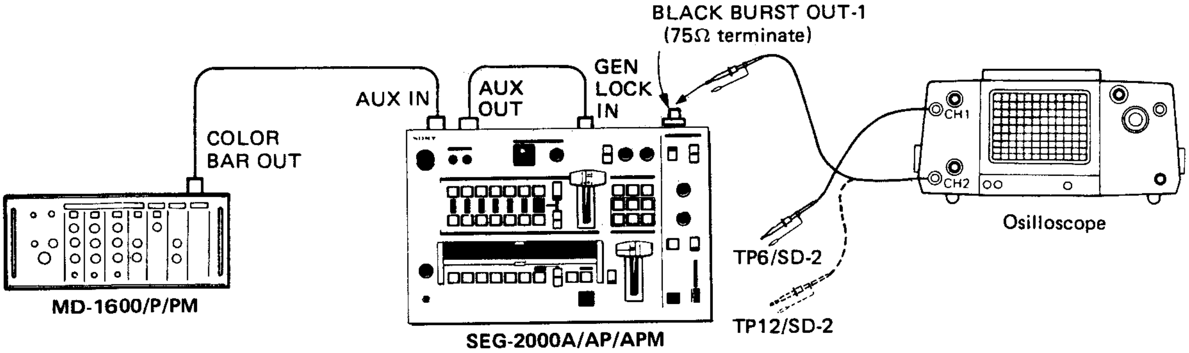
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM mode • PGM BUS selector; BACK GROUND "WHT" • PGM CUT IN/OUT switch; ON • NORMAL/INVERT switch; NORMAL • DSK KEY LEVEL control; ↻ MAX • INSERT LEVEL control; ↺ MIN • SHADOW switch; OFF	PGM OUT/rear panel 	⊘RV12/SD-2 ⊘RV13/SD-2

5-4-4. DSK V BLKG Pulse Width Adjustment

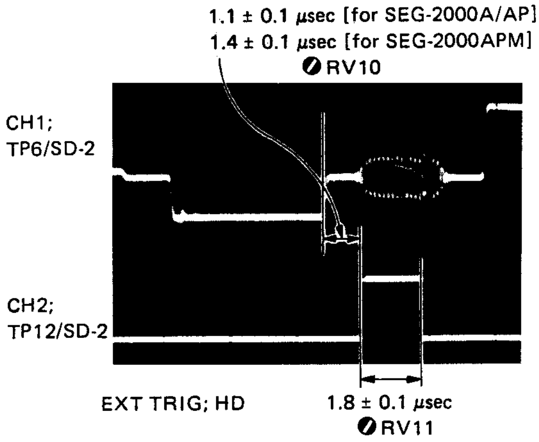
machine conditions for adjustment	measuring point	adjustment
• Same as the preseding clause	PGM OUT/rear panel 	⊘RV14/SD-2 ⊘RV15/SD-2

5-5. DSK CLAMP PULSE WIDTH ADJUSTMENT

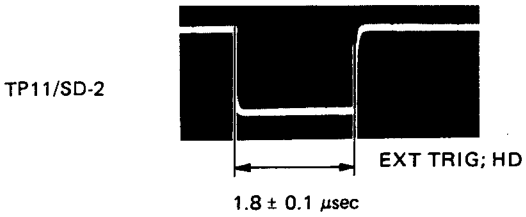
[Equipment Required & Connection]


BLACK BURST OUT-1
(75Ω terminate)
GEN
LOCK
IN
AUX IN
AUX
OUT
COLOR
BAR OUT
MD-1600/P/PM
SEG-2000A/AP/APM
TP6/SD-2
TP12/SD-2
CH1
CH2
Osilloscope

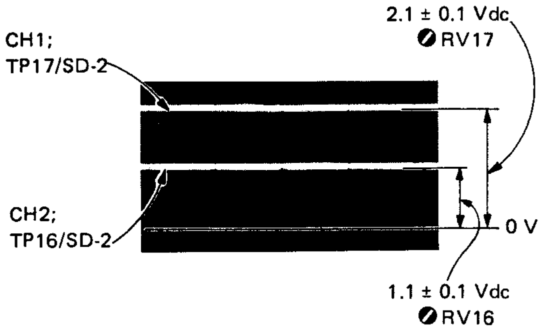
5-5-1. Clamp Pulse Phase and Pulse Width Adjustment

machine condition for adjustment	measuring point	adjustment
AUX IN; 75% color bar signal	 	⊘RV10/SD-2 ⊘RV11/SD-2

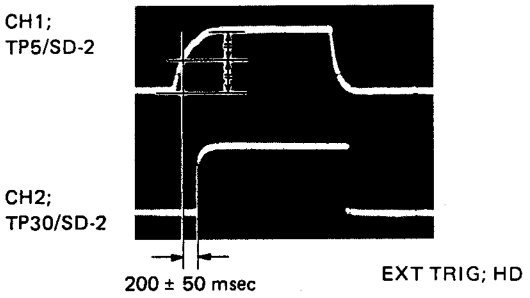
5-5-2. AUX Clamp Pulse Width Adjustment

machine condition for adjustment	measuring point	adjustment
AUX IN; 75% color bar signal	 	⊘RV9/SD-2

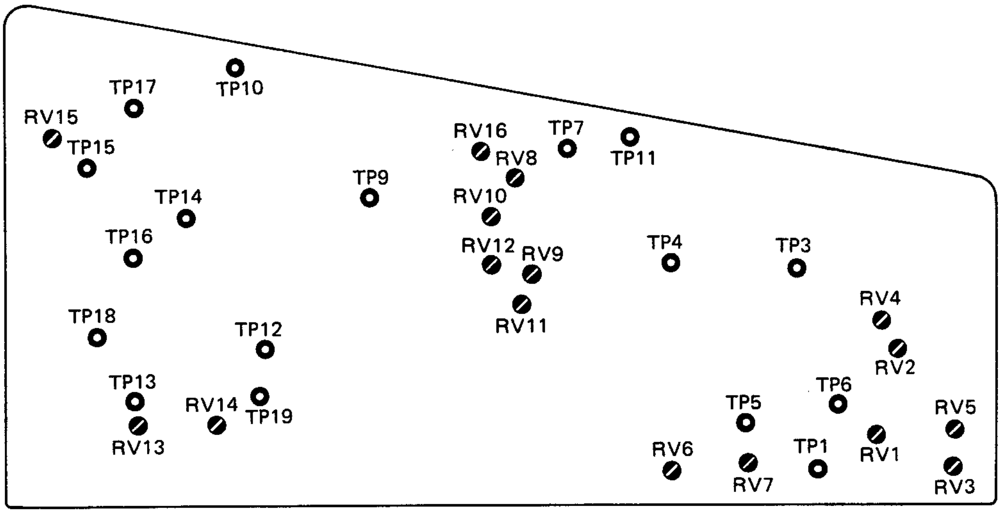
5-6. BORDER LINE WIDTH ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	 2.1 ± 0.1 Vdc ⊘RV17 CH1; TP17/SD-2 CH2; TP16/SD-2 0 V 1.1 ± 0.1 Vdc ⊘RV16	⊘RV16/SD-2 ⊘RV17/SD-2

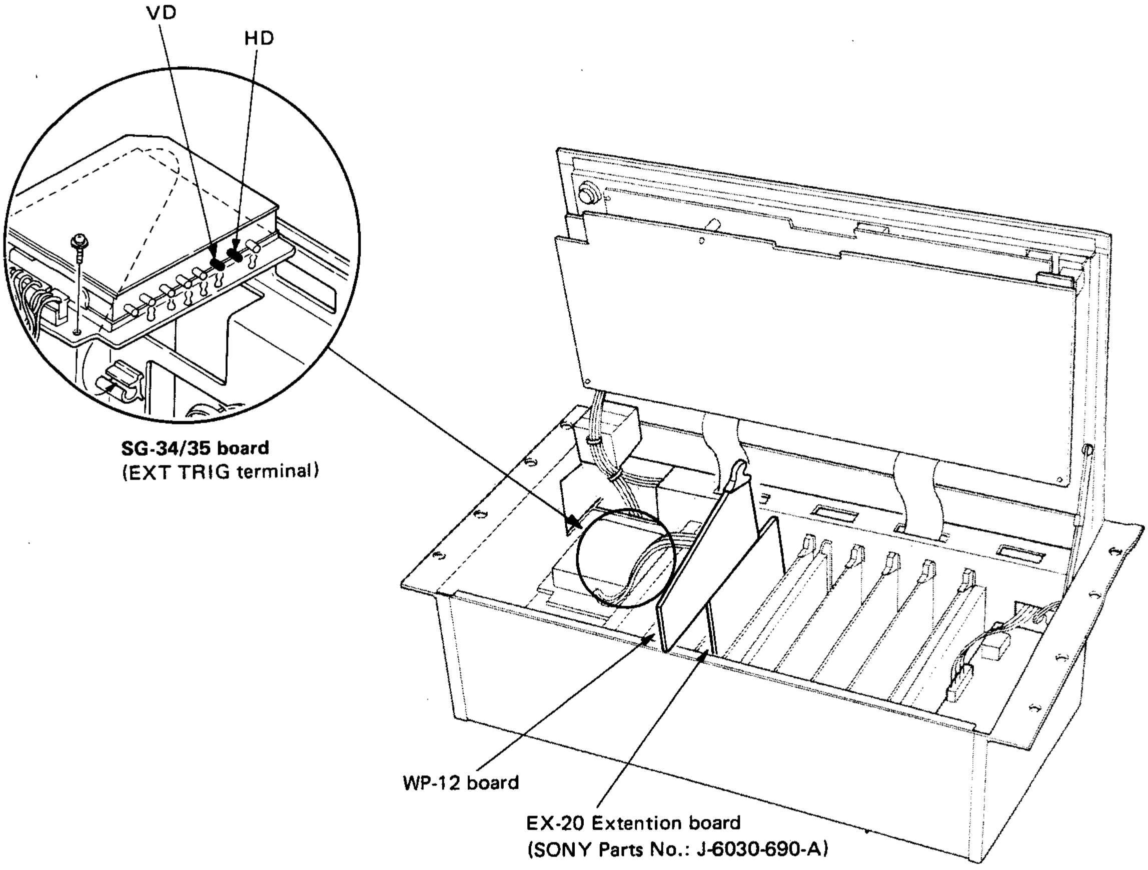
5-7. SYNC DELAY ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	 CH1; TP5/SD-2 CH2; TP30/SD-2 200 ± 50 msec EXT TRIG; HD	⊘RV1/SD-2

SECTION 6
WIPE SYSTEM ALIGNMENT


TP17
TP10
RV15
TP15
RV16
TP7
RV8
TP11
TP9
RV10
TP14
TP16
RV12
RV9
TP4
TP3
RV11
RV4
RV2
TP18
TP12
TP13
RV14
TP19
TP6
TP5
RV5
RV13
RV6
TP1
RV1
RV7
RV3

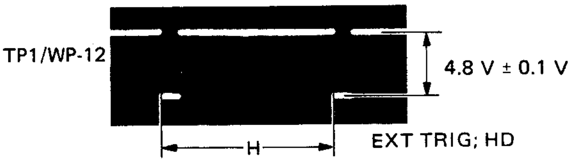
WP-12 board (component side)


VD
HD
SG-34/35 board
(EXT TRIG terminal)
WP-12 board
EX-20 Extention board
(SONY Parts No.: J-6030-690-A)

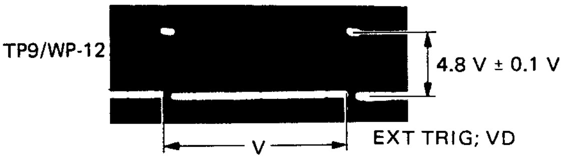
[Equipment Required]

- Dual trace oscilloscope
- Monitor TV

6-1. H BLKG LEVEL ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
• EFFECTS SELECT switch; WIPE "▬"	 TP1/WP-12 4.8 V ± 0.1 V H EXT TRIG; HD	⊘ RV1/WP-12

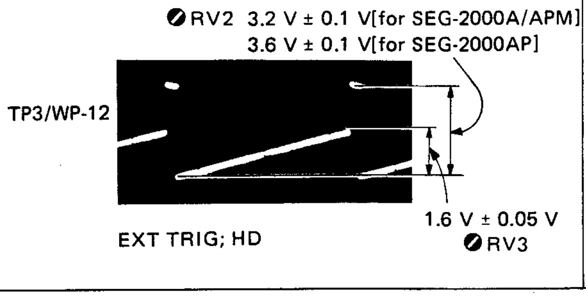
6-2. V BLKG LEVEL ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
• EFFECTS SELECT switch; WIPE "■□"	 TP9/WP-12 4.8 V ± 0.1 V V EXT TRIG; VD	⊘ RV8/WP-12

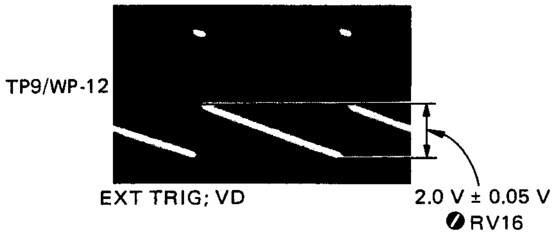
6-3. WIPE PULSE ADJUSTMENT

Note: The H1 Pulse Adjustment, the V1 Pulse Adjustment, the V2 Pulse Adjustment and the H2 Pulse Adjustment mutually affect each other.
Consequently, when performing these adjustment, alternately repeat the four adjustments two or three times to obtain the desired spec.

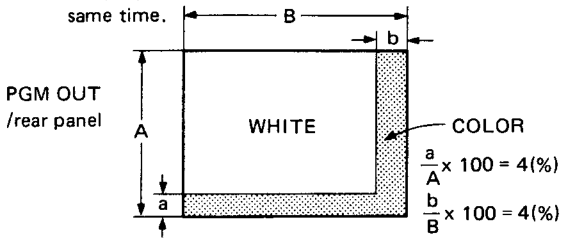
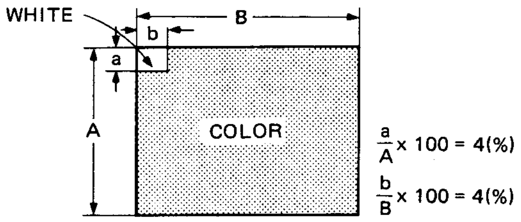
6-3-1. H1 Pulse Adjustment

machine condition for adjustment	measuring point	adjustment
• EFFECTS SELECT switch; WIPE	 ⊘RV2 3.2 V ± 0.1 V[for SEG-2000A/APM] 3.6 V ± 0.1 V[for SEG-2000AP] TP3/WP-12 1.6 V ± 0.05 V ⊘RV3 EXT TRIG; HD	⊘ RV2/WP-12 ⊘ RV3/WP-12 Alternately repeat the two adjustments two or three times to obtain the desired spec.

6-3-2. V1 Pulse Adjustment 1

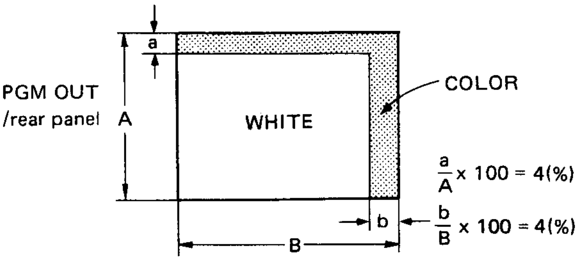
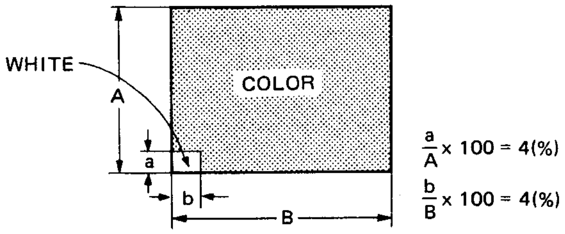
machine condition for adjustment	measuring point	adjustment
• EFFECTS SELECT switch; WIPE	Turn the RV11, RV12 fully clockwise ↻. 	⊘RV16/WP-12

6-3-3. V1 Pulse Adjustment 2

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM mode • PGM BUS selector; EFF mode • A BUS selector; BACK GROUND "COLOR" • B BUS selector; BACK GROUND "WHT" • EFFECTS SELECT switch; WIPE "◧" • SOFT/HARD/BORDER switch; HARD • PGM/PST MIX Lever; front side or rear side	**step. 1** When laying down the EFFECT Lever to the front side, adjust so that "a" and "b" fade away at the same time.  B b PGM OUT /rear panel A WHITE COLOR a $\frac{a}{A} \times 100 = 4(\%)$ $\frac{b}{B} \times 100 = 4(\%)$	⊘RV10/WP-12
	step 2. When laying down the EFFECT Lever to the rear side, adjust so that "a" and "b" fade away at the same time.  WHITE B b a A COLOR $\frac{a}{A} \times 100 = 4(\%)$ $\frac{b}{B} \times 100 = 4(\%)$	⊘RV9/WP-12

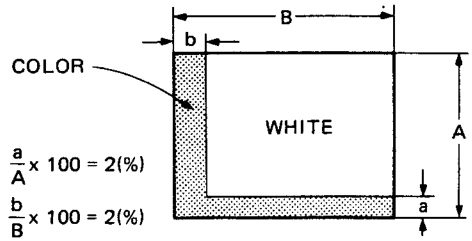
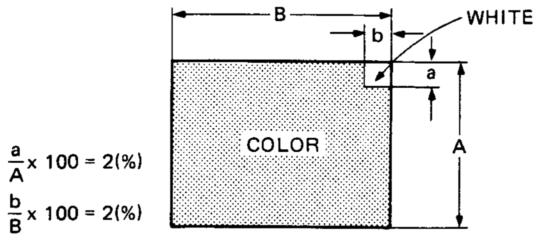
Note: The step 1 and step 2 mutually affect each other. Consequently, alternatly repeat the two adjustments two or three times to obtain the desired spec.

6-3-4. V2 Pulse Adjustment

machine conditions for adjustment	measuring point	adjustment
Difference of preceding clause. • EFFECTS SELECT switch; WIPE "◱"	**step 1.** When laying down the EFFECT Lever to the front side, adjust so that "a" and "b" fade away at the same time.  PGM OUT /rear panel A a WHITE COLOR b B $\frac{a}{A} \times 100 = 4(\%)$ $\frac{b}{B} \times 100 = 4(\%)$	⊘ RV12/WP-12
	step 2. When laying down the EFFECT Lever to the rear side, adjust so that "a" and "b" fade away at the same time.  $\frac{a}{A} \times 100 = 4(\%)$ $\frac{b}{B} \times 100 = 4(\%)$	⊘ RV11/WP-12

Note: The step 1 and step 2 mutually affect each other. Consequently, alternatly repeat the two adjustments two or three times to obtain the desired spec.

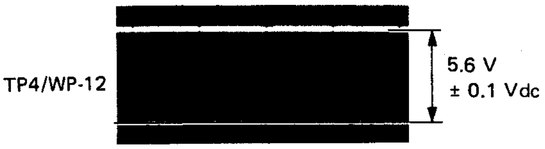
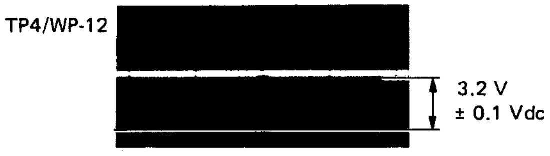
6-3-5. H2 Pulse Adjustment

machine conditions for adjustments	measuring point	adjustments
Difference of preceding clause • EFFECTS SELECT switch; WIPE "◳"	**step 1.** When laying down the EFFECT Lever to the front side, adjust so that "a" and "b" fade away at the same time.  $\frac{a}{A} \times 100 = 2(\%)$ $\frac{b}{B} \times 100 = 2(\%)$	⊘ RV5/WP-12
	step 2. When laying down the EFFECT Lever to the rear side, adjust so that "a" and "b" fade away at the same time.  $\frac{a}{A} \times 100 = 2(\%)$ $\frac{b}{B} \times 100 = 2(\%)$	⊘ RV4/WP-12

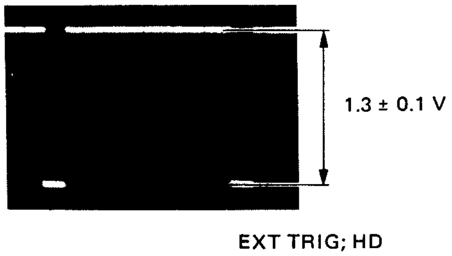
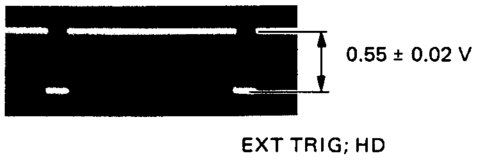
Note: The step 1 and step 2 mutually affect each other. Consequently, alternatly repeat the two adjustments two or three times to obtain the desired spec.

6-4. EFFECTS FADER VOLTAGE ADJUSTMENT

6-4-1. EFFECTS WIPE Fader Limit Voltage Adjustment

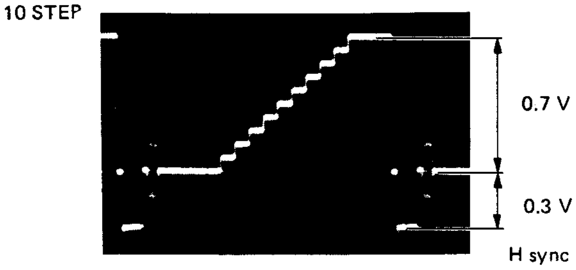
machine conditions for adjustments	measuring point	adjustments
• A BUS selector; BACK GROUND "COLOR" • B BUS selector; BACK GROUND "WHT" • EFFECTS SELECT switch; WIPE "◨" • SOFT/HARD/BORDER switch; SOFT • SOFTNESS/BORDER control; ↻ MAX	1. Upper Limit Voltage Adjustment. Set the EFFECTS Lever to the rear side until the point just before the micro switch action sound is heard.  	⊘ RV6/WP-12
	2. Lower Limit Voltage Adjustment. Set the EFFECTS Lever to the front side until the point just before the micro switch action sound is heard.  	⊘ RV7/WP-12

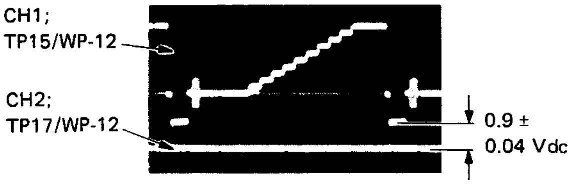
6-4-2. EFFECTS MIX Fader Limit Voltage Adjustment

machine condition for adjustment	measuring point	adjustment
	1. Upper Limit Voltage Adjustment Set the EFFECTS Lever fully to front side.  	⊘ RV14/WP-12
	2. Lower Limit Voltage Adjustment Set the EFFECTS Lever fully to rear side.  	⊘ RV13/WP-12

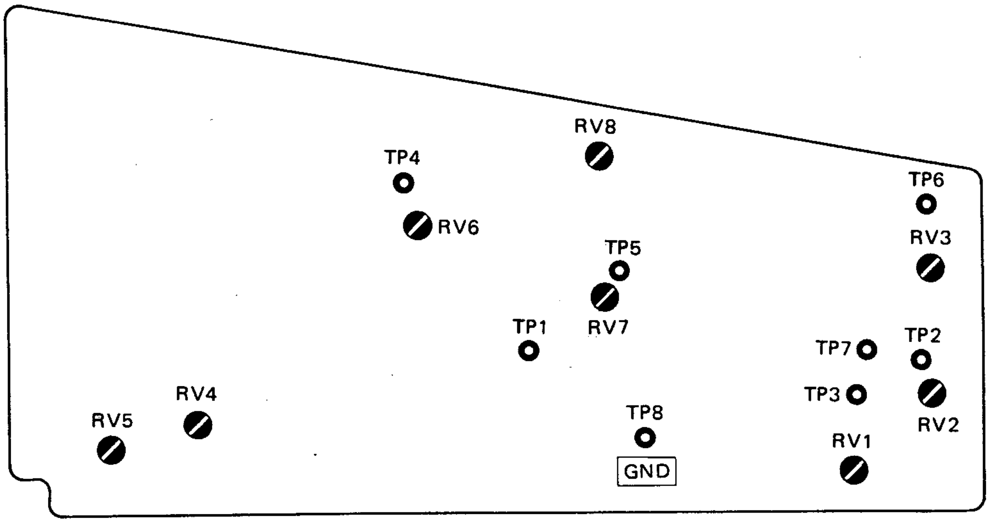
6-5. EXT KEY CLAMP LEVEL ADJUSTMENT

If the NON-MODULATED LINEARITY signal is available, proceed to this adjustments.
If the NON-MODULATED LINEARITY signal as shown below, is available.

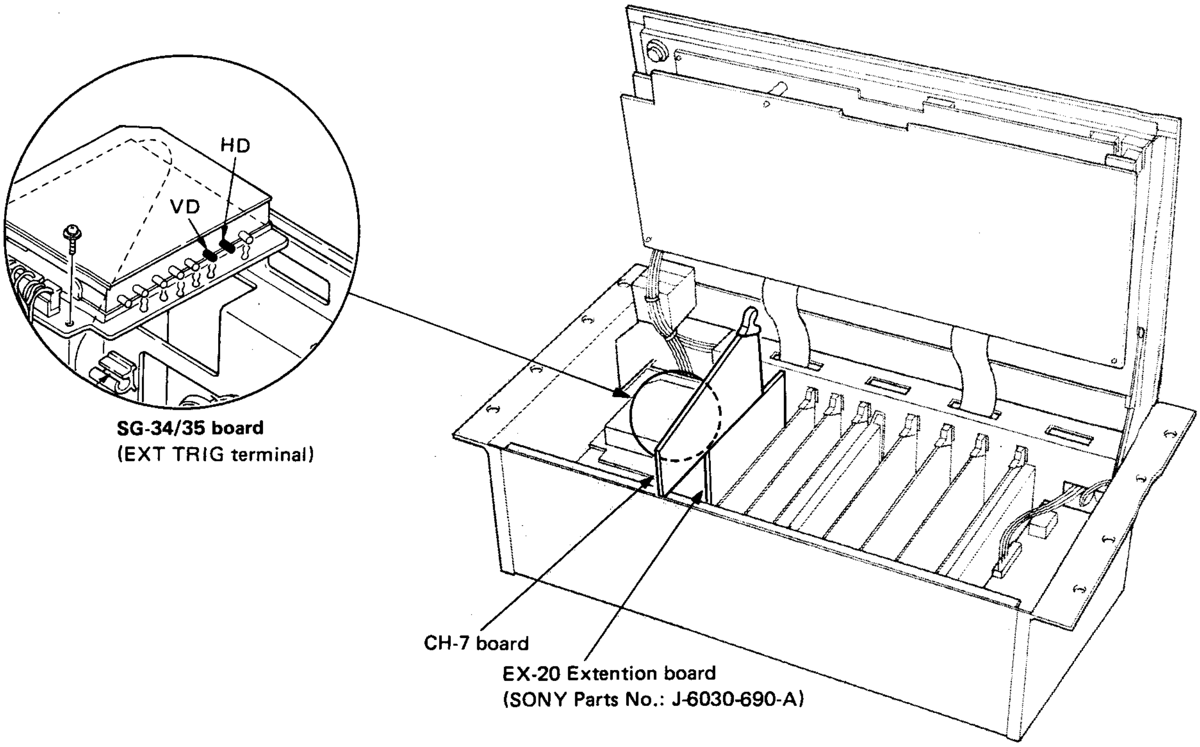


machine conditions for adjustment	measuring point	adjustment
• EFFECTS SELECT switch; EXT KEY • EXT KEY LEVEL control; ↺ MIN • EXT KEY IN; NON-MODULATED LINEARITY Signal.	• Set the oscilloscope at DC range and put together the "GND" of CH1 and CH2.  	⊘ RV15/WP-12

SECTION 7
PHASE INDICATION SYSTEM ALIGNMENT


RV8
TP4
RV6
TP6
TP5
RV3
RV7
TP1
TP7
TP2
TP3
RV4
RV5
TP8
GND
RV1
RV2

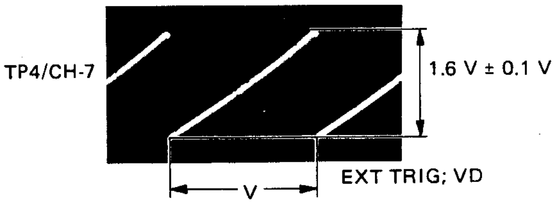
CH-7 board


HD
VD
SG-34/35 board
(EXT TRIG terminal)
CH-7 board
EX-20 Extention board
(SONY Parts No.: J-6030-690-A)

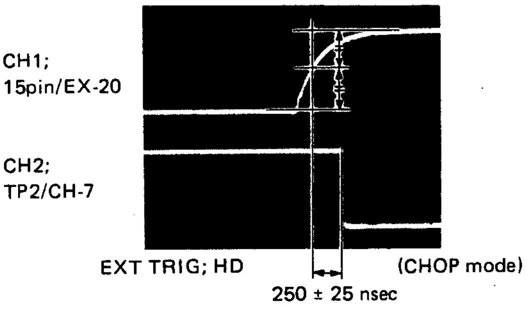
[Equipment Required]

- Dual trace oscilloscope

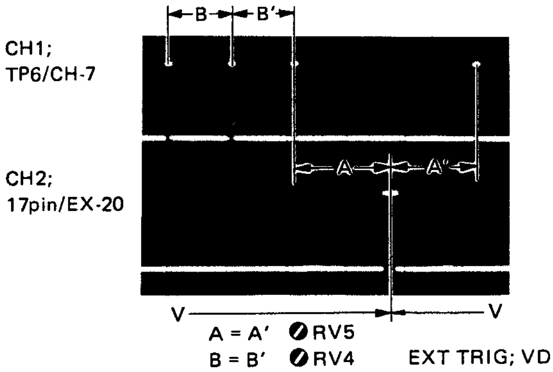
7-1. V RAMP GAIN ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	 TP4/CH-7 1.6 V ± 0.1 V V EXT TRIG; VD	⊘RV6/CH-7

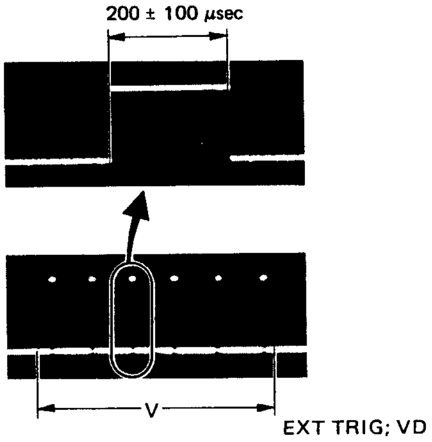
7-2. SYNC DELAY ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	 CH1; 15pin/EX-20 CH2; TP2/CH-7 EXT TRIG; HD (CHOP mode) 250 ± 25 nsec	⊘RV2/CH-7

7-3. H PHASE INDICATION ADJUSTMENT

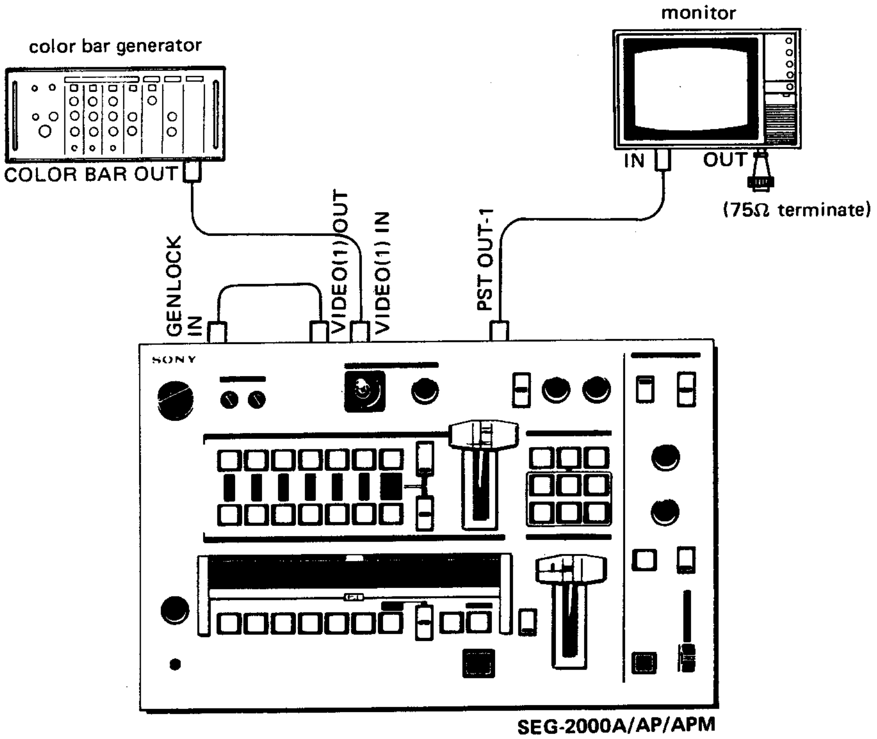
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PST BUS selector; # 1 ↓ • PGM/PST switch; PST	 B B' CH1; TP6/CH-7 CH2; 17pin/EX-20 A A' V V A = A' ⊘RV5 B = B' ⊘RV4 EXT TRIG; VD	⊘RV4/CH-7 ⊘RV5/CH-7

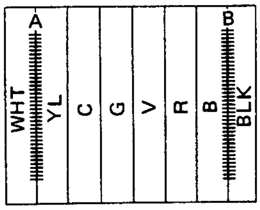
7-4. H PHASE INDICATION PULSE WIDTH ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	TP3/CH-7  200 ± 100 µsec V EXT TRIG; VD	⊘RV3/CH-7

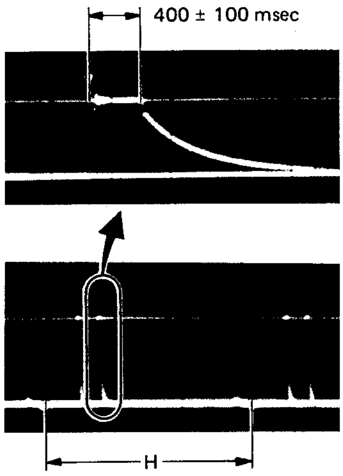
7-5. SC PHASE INDICATION ADJUSTMENT (1)

[Equipment Required]


monitor
color bar generator
COLOR BAR OUT
IN
OUT
(75Ω terminate)
GENLOCK IN
VIDEO(1) OUT
VIDEO(1) IN
PST OUT-1
SONY
SEG-2000A/AP/APM

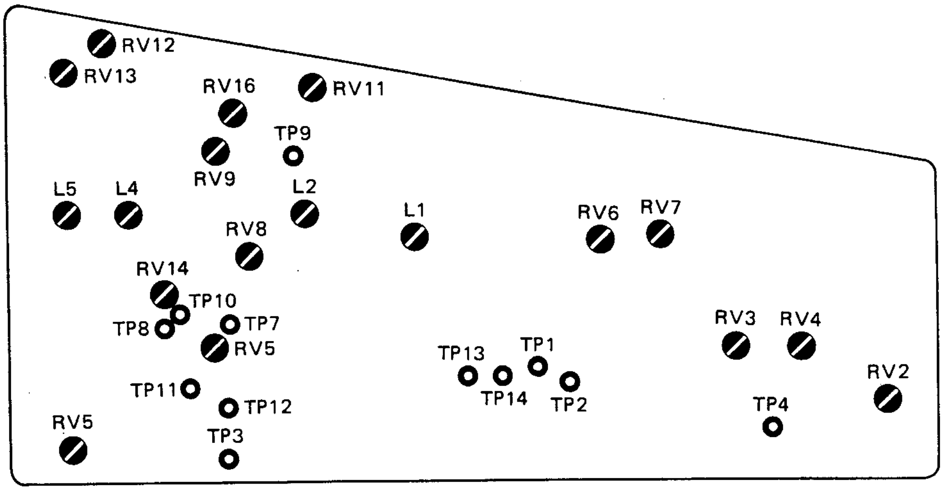
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PST • PST BUS selector; # 1 • PHASE INDICATION switch; ON VIDEO-1 IN connector; 75% color bar signal	PST OUT-1/rear panel monitor  **step 1.** Adjust the ⊘ RV7 so that "B" line is positioned between BLUE and BLACK. **step 2.** Adjust the ⊘ RV8 so that "A" line is positioned between WHITE and YELLOW.	⊘ RV7/CH-7 ⊘ RV8/CH-7

7-6. SC PHASE INDICATION PULSE WIDTH ADJUSTMENT

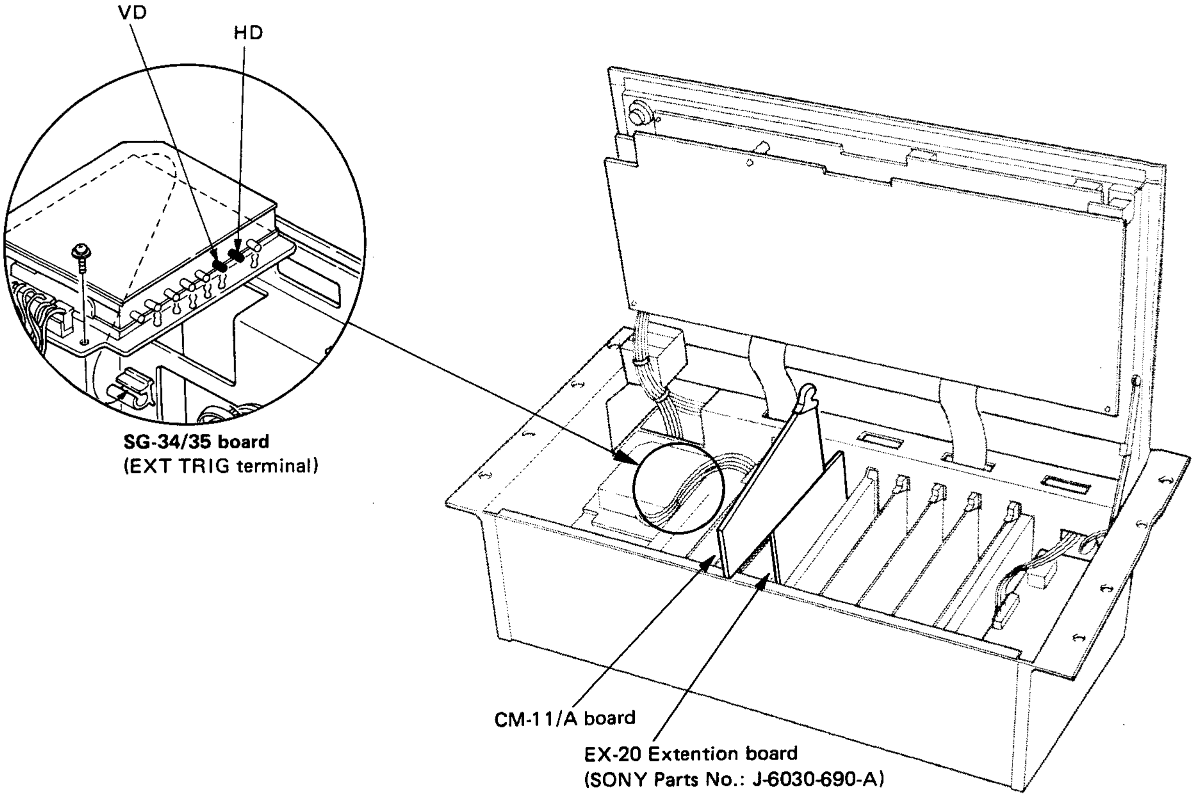
machine condition for adjustment	measuring point	adjustment
	TP3/CH-7  EXT TRIG; HD	⊘ RV1/CH-7

SECTION 8

BACK GROUND COLOR SYSTEM ALIGNMENT

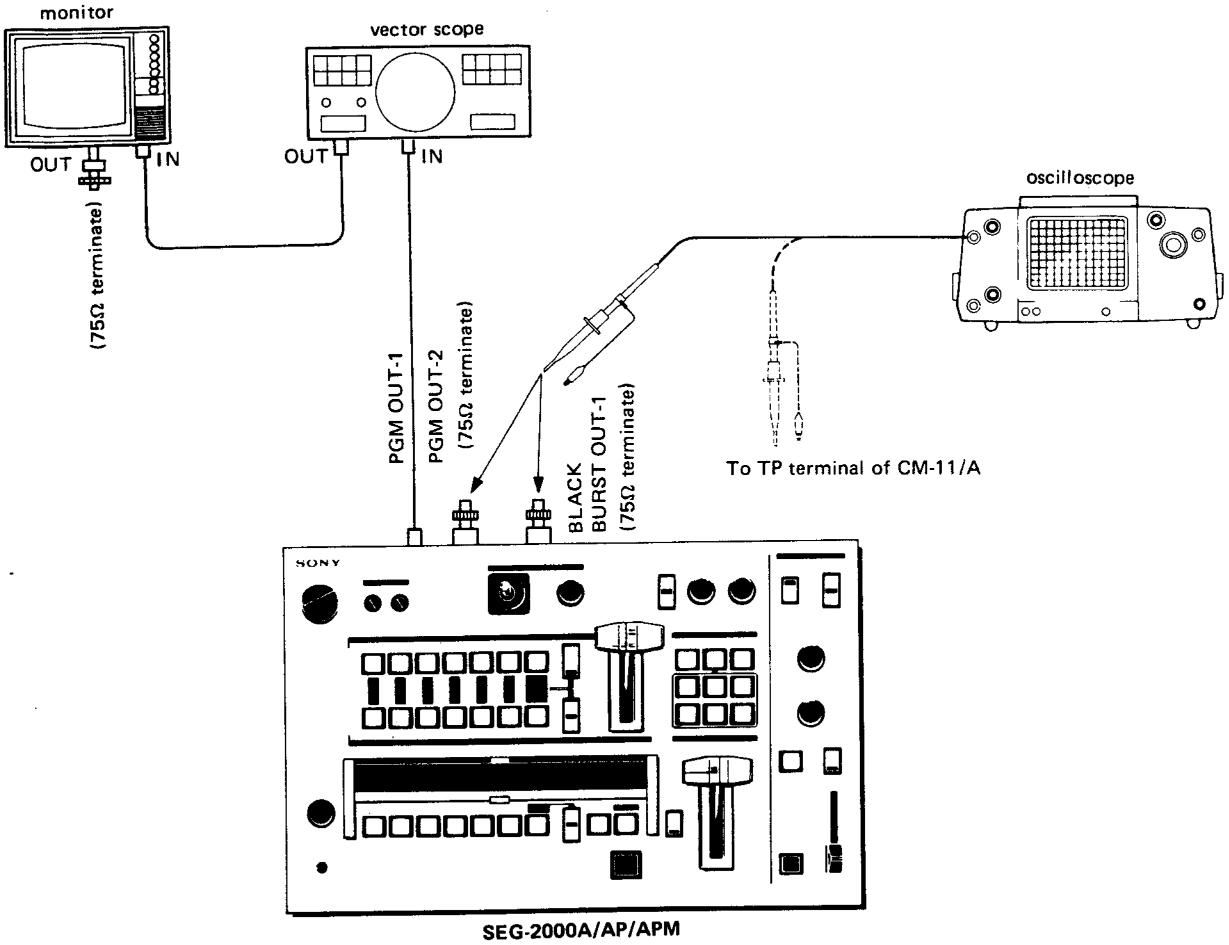

RV12
RV13
RV16
RV11
TP9
RV9
L5
L4
L2
RV8
L1
RV6
RV7
RV14
TP10
TP8
TP7
RV5
TP13
TP1
RV3
RV4
TP14
TP2
RV2
TP11
TP12
TP4
RV5
TP3

CM-11/A board


VD
HD
SG-34/35 board
(EXT TRIG terminal)
CM-11/A board
EX-20 Extention board
(SONY Parts No.: J-6030-690-A)

[Equipment Required]

- Digital voltmeter
- Vectorscope
- Dual trace oscillosope
- Monitor TV


monitor
OUT
IN
(75Ω terminate)
vector scope
OUT
IN
oscilloscope
PGM OUT-1
PGM OUT-2
(75Ω terminate)
BLACK
BURST OUT-1
(75Ω terminate)
To TP terminal of CM-11/A
SONY
SEG-2000A/AP/APM

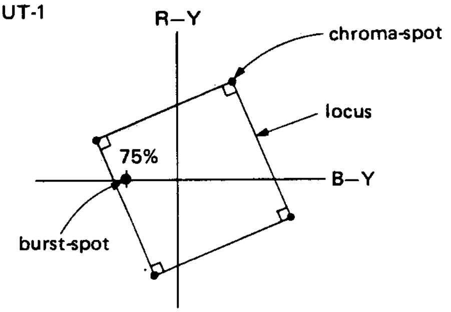
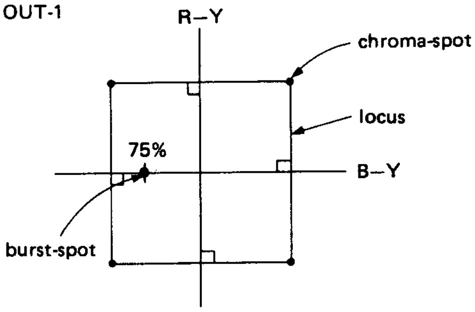
8-1. +5V VOLTAGE ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	TP3 (GND; TP2)/CM-11A 5.0 V ± 0.1 Vdc or CM-11	⊘ RV15/CM-11A or CM-11

8-2. BACK GROUND COLOR PHASE ADJUSTMENT

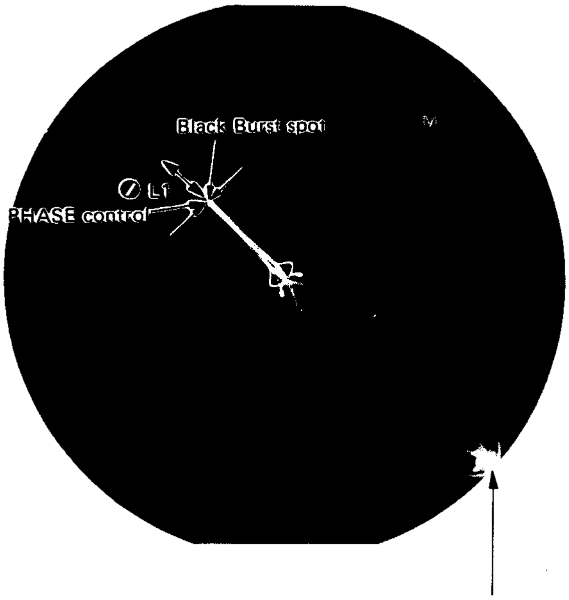
Note: The sec. 8-2, BACK GROUND COLOR PHASE ADJUSTMENT, the sec. 8-4, BLACK BURST ADJUSTMENT, the sec. 8-6, CARRIER BALANCE ADJUSTMENT and the sec. 8-8, BACK GROUND VIDEO LEVEL ADJUSTMENT mutually affect each other. Consequently, when performing these adjustment, alternately repeat the four adjustments two or three times to obtain the desired spec.

[For SEG-2000A use]

machine condition for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; BACK GROUND "COLOR"	1. Sub-carrier 90° Adjustment PGM OUT-1  Adjust ⊘ L1 so that the locus of chroma-spot on screen become most square.	⊘ L1/CM-11A Turn the Joystick fully to tilting
	2. Back Ground Color Phase Adjustment PGM OUT-1  Adjust ⊘ L2 so that the action of chroma spot on screen become most orthogonal locus against B–Y and R–Y.	⊘ L2/CM-11A Turn the Joystick fully to tilting

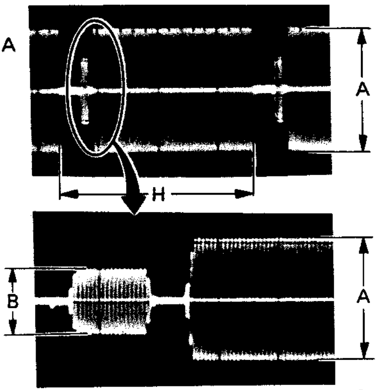
Note: The ⊘ L1 and the ⊘ L2 mutually affect each other. Consequently, alternatly repeat the two adjustments two or three times to obtain the desired spec.

[For SEG-2000AP/APM use]

machine conditions for adjustment	measuring point & adjustment
• PGM/PST switch; PGM • PST BUS selector; BACK GROUND "COLOR" • PGM/PST MIX Lever; front side • BACK GROUND COLOR joystick ; chroma level "MAX"	**step 1.** Depress the NTSC pushbutton of vectorscope and set the two burst spots on 75% vector Graticule by the PHASE control. **step 2.** Adjust the ⊘ L1/CM-11 so that the burst spot become a dot. **step 3.** Adjust the ⊘ L2/CM-11 so that the some of four corner chroma spot become a dot. PGM OUT-1 /rear panel  Black Burst spot ⊘ L1 PHASE control Back Ground chroma spot ⊘ L2

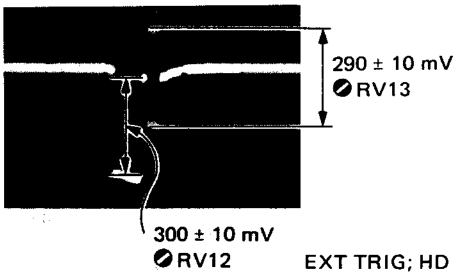
Note: The step 1 and step 2 mutually affect each other.
Consequently, alternately repeat the two adjustment two or three times to obtain the desired spec.

8-3. BURST SYNC LEVEL ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
● PGM/PST switch; PGM ● PST BUS selector; BACK GROUND "COLOR" ● LUM control; fully clockwise	TP9/CM-11/A  EXT TRIG; HD **step 1.** Set the joystick so that the level of "A" become most maximum. **step 2.** Burst Level Adjustment A : B = 7 : 3	⊘RV2/CM-11A or CM-11

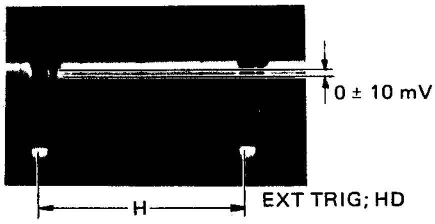
8-4. BLACK BURST ADJUSTMENT (1)

Note: The sec. 8-2, Back Ground Color Phase Adjustment, the sec. 8-4, Black Burst Adjustment (1), the sec. 8-6, Carrier Balance Adjustment and the sec. 8-8, Back Ground Video Level Adjustment mutually affect each other.
Consequetly, when performing these adjustments, alternately repeat the four adjustments two or three times to obtain the desired spec.

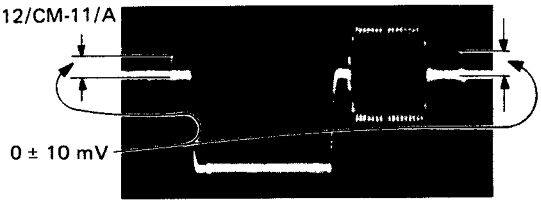
machine condition for adjustment	measuring point	adjustment
	⊘ RV3/CM-11A or CM-11 ⟶ fully to counterclockwise BLACK BURST OUT-1 /rear panel  EXT TRIG; HD	⊘RV12/CM-11A or CM-1 1 ⊘RV13/CM-11A or CM-1 1 Adjust the two adjustments mutually affect each other. Consequently, alternately repeat the them two or three times to obtain the desired spec.

8-5. BLACK BURST ADJUSTMENT (2)

8-5-1. Black Level Adjustment

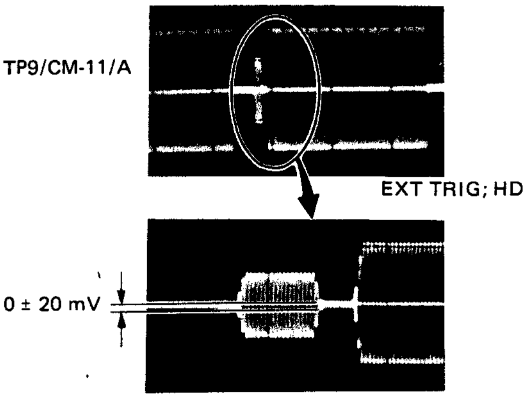
machine condition for adjustment	measuring point	adjustment
	BLACK BURST OUT-1 /rear panel 	⊘ RV11/CM-11A or CM-11

8-5-2. DC Balance Adjustment

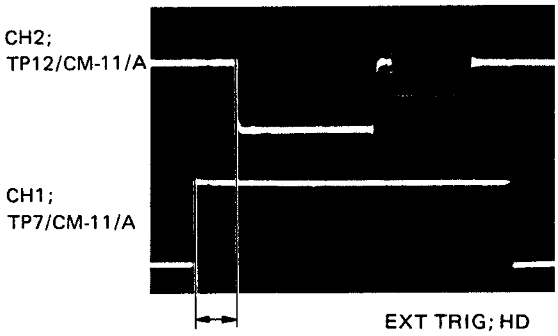
machine condition for adjustment	measuring point	adjustment
	TP12/CM-11/A 	⊘ RV6/CM-11A or CM-11

8-6. CARRIER BALANCE ADJUSTMENT

Note: The sec. 8-2, Back Ground Color Phase Adjustment, the sec. 8-4, Black Burst Adjustment (1), the sec. 8-6, Carrier Balance Adjustment and the sec. 8-8, Back Ground Video Level Adjustment mutually affect each other.
Consequently, when performing these adjustments, alternately repeat the four adjustments two or three times to obtain the desired spec.

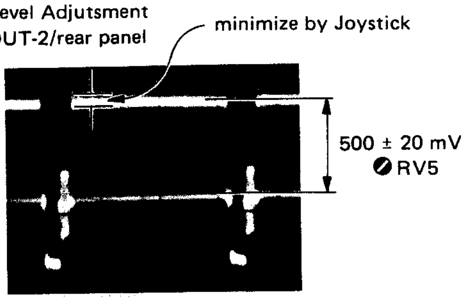
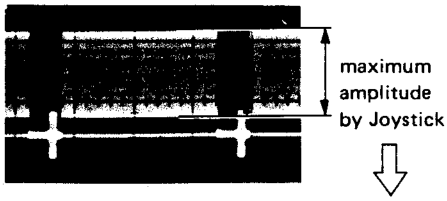
machine condition for adjustment	measuring point	adjustment
	TP9/CM-11/A  Adjust ⊘ RV6 and ⊘ RV7 alternately and repeatly two or three times to obtain desired spec.	⊘ RV6/CM-11A or CM-11 ⊘ RV7/CM-11A or CM-11

8-7. BLKG PHASE ADJUSTMENT

machine condition for adjustment	measuring point	adjustment
	 1.5 ± 0.1 µsec [SEG-2000A/APM] 1.55 ± 0.1 µsec [SEG-2000AP]	⊘ RV4/CM-11A or CM-11

8-8. BACK GROUND VIDEO LEVEL ADJUSTMENT

Note: The sec. 8-2, Back Ground Color Phase Adjustment, the sec. 8-4, Black Burst Adjustment, the sec. 8-6, Carrier Balance Adjustment and the sec. 8-8, Back Ground Video Level Adjustment mutually affect each other.
Consequently, when performing these adjustments, alternately repeat the four adjustments two or three times to obtain the desired spec.

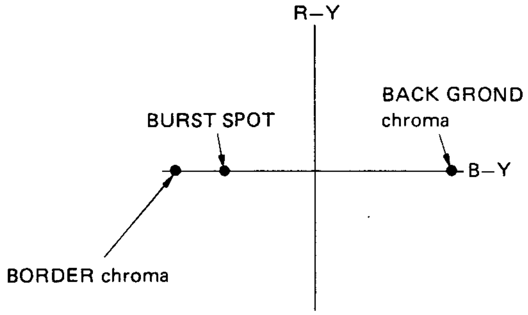
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PST BUS selector; BACK GROUND "COLOR" • LUM control; fully clockwise • PGM/PST MIX lever; front side	1. Y Level Adjutsment PGM OUT-2/rear panel  EXT TRIG; HD	⊘ RV5/CM-11A or CM-11
	2. Chroma Level Adjustment PGM OUT-2/rear panel  ⇩ 700 ± 40 mV ⊘ RV8 EXT TRIG; HD	⊘ RV8/CM-11A or CM-11

8-9. BORDER VIDEO AMP ADJUSTMENT

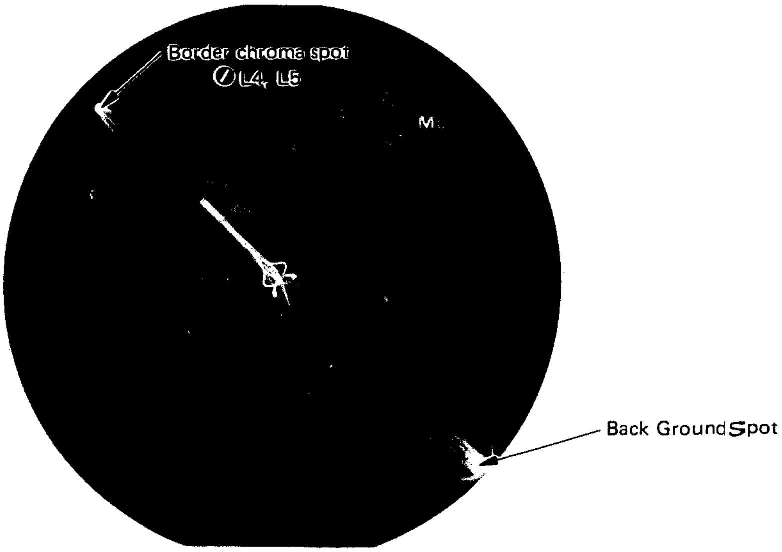
Note: The sec. 8-9-1, Phase Adjustment and the sec. 8-9-2, Chroma Level Adjustment mutually affect each other.
Consequently, alternately repeat the two adjustments two or three times to obtain the desired spec.

8-9-1. Border Phase Adjustment

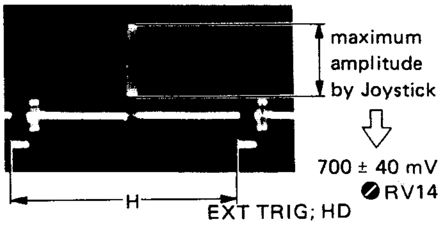
[For SEG-2000A use]

machine conditions for adjustment	measuring point	adjustment
• A BUS selector; BACK GROUND "COLOR" • B BUS selector; BACK GROUND "COLOR" • PGM BUS selector; EFF • EFFECTS SELECT; WIPE ◨ • PGM/PST MIX Lever; center • SOFT/HARD/BORDER switch; BORDER • SOFTNESS/BORDER control; fully to clockwise	• Set the Joystick control for correct BACK GROUND Chroma spot.  R–Y BACK GROND chroma BURST SPOT B–Y BORDER chroma Adjust the ⊘ L4 and ⊘ L5 alternately and repeatly two or three times for correct BORDER chroma.	⊘ L4/CM-11A ⊘ L5/CM-11A

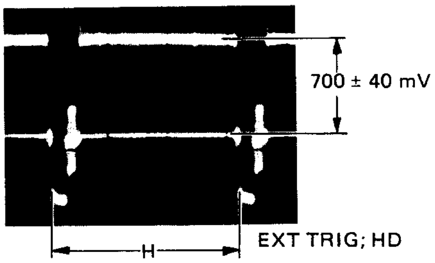
[For SEG-2000AP/APM use]

machine conditions for adjustment	measuring point & adjustment
• A BUS selector; BACK GROUND "COLOR" • B BUS selector; BACK GROUND "COLOR" • PGM BUS selector; EFF • EFFECTS SELECT; WIPE ◨ • PGM/PST MIX Lever; center • SOFT/HARD/BORDER switch; fully to clockwise Vectorscope mode ⟶ NTSC	Adjust the ⊘ L4 and ⊘ L5 alternately and repeatly two or three times so that the some of four corner border chroma spot become a dot. 

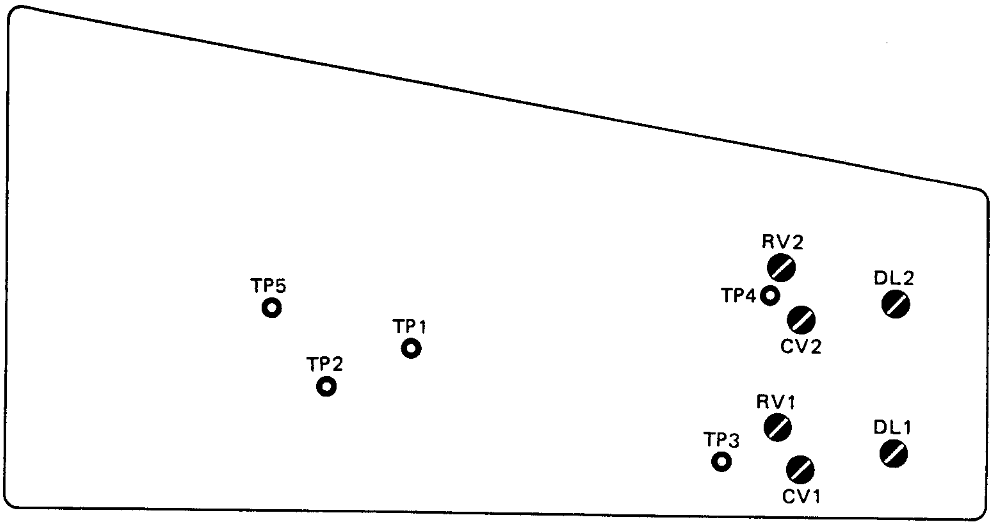
8-9-2. Border Chroma Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• A BUS selector; # 1 • B BUS selector; # 1 • PST BUS selector; EFF • EFFECTS SELECT; WIPE ◨ • MIX Lever; center • SOFT/HARD/BORDER switch; BORDER • SOFTNESS/BORDER control; fully to clockwise	PGM OUT-2 /rear panel  maximum amplitude by Joystick 700 ± 40 mV ⊘RV14 H EXT TRIG; HD	⊘RV14/CM-11A or CM-11

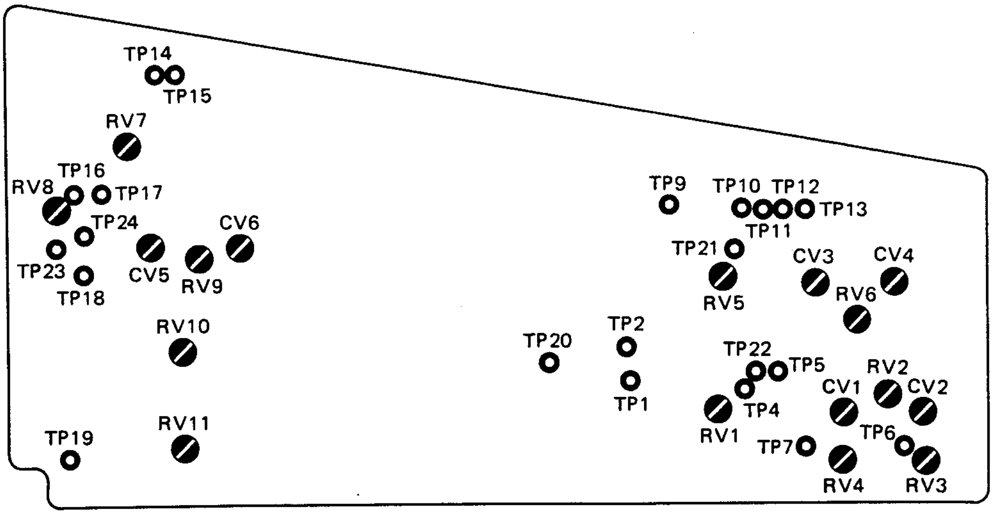
8-10. WHITE LEVEL ADJUSTMENT

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; BACK GROUND "WHT" • PGM/PST MIX Lever; front side	PGM OUT-2 /rear panel  700 ± 40 mV H EXT TRIG; HD	⊘RV9/CM-11A or CM-11

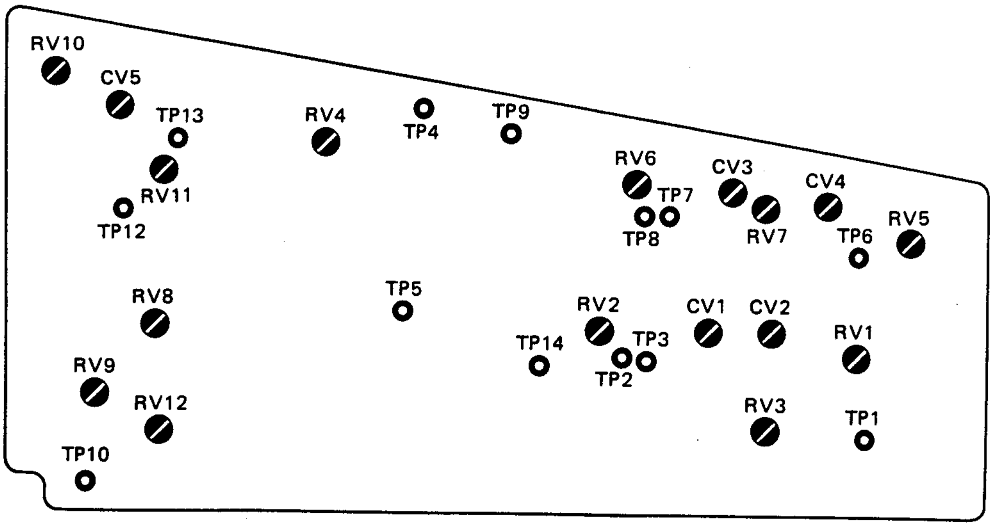
SECTION 9
EFFECT SYSTEM ALIGNMENT


RV2
TP5
TP4
DL2
TP1
CV2
TP2
RV1
TP3
DL1
CV1

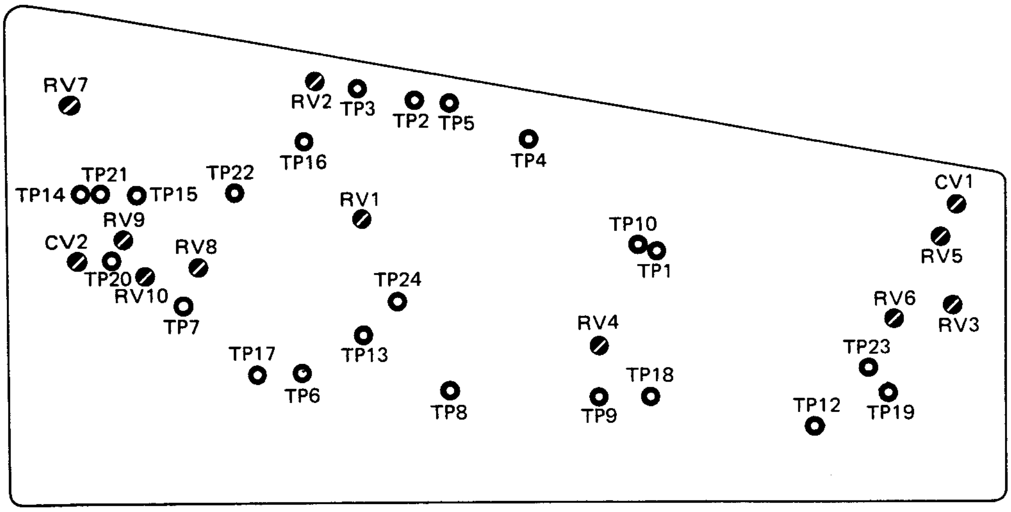
EF-8 board


TP14
TP15
RV7
TP16
RV8
TP17
TP24
TP23
TP18
CV5
RV9
CV6
RV10
RV11
TP19
TP9
TP10
TP12
TP13
TP11
TP21
CV3
CV4
RV5
RV6
TP20
TP2
TP1
TP22
TP5
TP4
RV2
CV1
CV2
RV1
TP7
TP6
RV4
RV3

EF-9 board


RV10
CV5
TP13
RV4
TP4
TP9
RV11
TP12
RV6
TP7
TP8
CV3
RV7
CV4
TP6
RV5
RV8
TP5
RV2
CV1
CV2
RV1
TP14
TP3
TP2
RV9
RV12
RV3
TP1
TP10

EF-10 board


RV7
RV2
TP3
TP2
TP5
TP16
TP4
TP21
TP22
TP14
TP15
CV1
RV1
RV9
TP10
CV2
RV8
RV5
TP20
TP1
TP24
RV10
RV6
TP7
RV3
RV4
TP17
TP13
TP23
TP18
TP6
TP8
TP9
TP12
TP19

DK-4 board (component side)

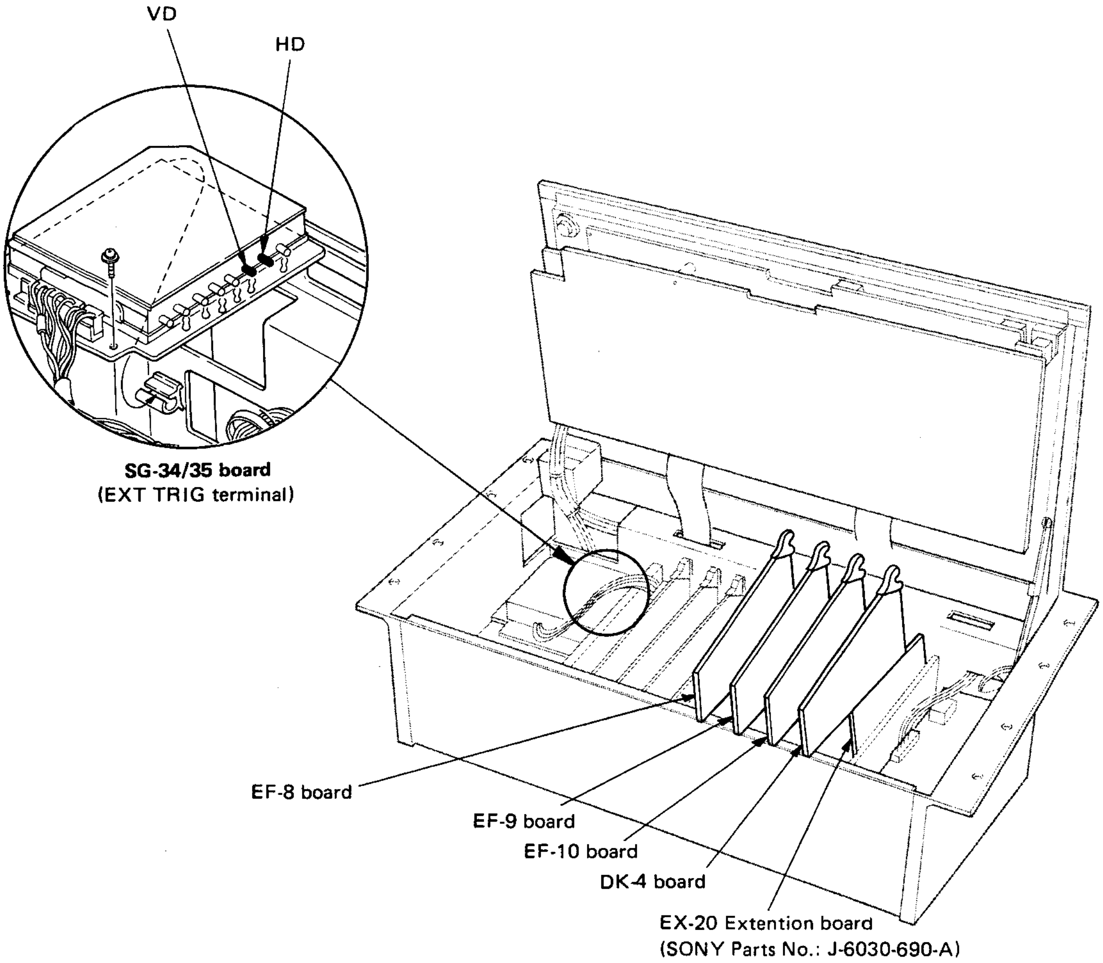

VD
HD
SG-34/35 board
(EXT TRIG terminal)
EF-8 board
EF-9 board
EF-10 board
DK-4 board
EX-20 Extention board
(SONY Parts No.: J-6030-690-A)

Fig. 9-1. Location of measuring points and controls

[Equipment Required]

- Dual Trace Oscilloscope (more than 30 MHz)
- Vector Scope
- Sweep Generator
- Color Bar Generator (SONY MD-1600/P/PM multisignal distributor or equivalent)

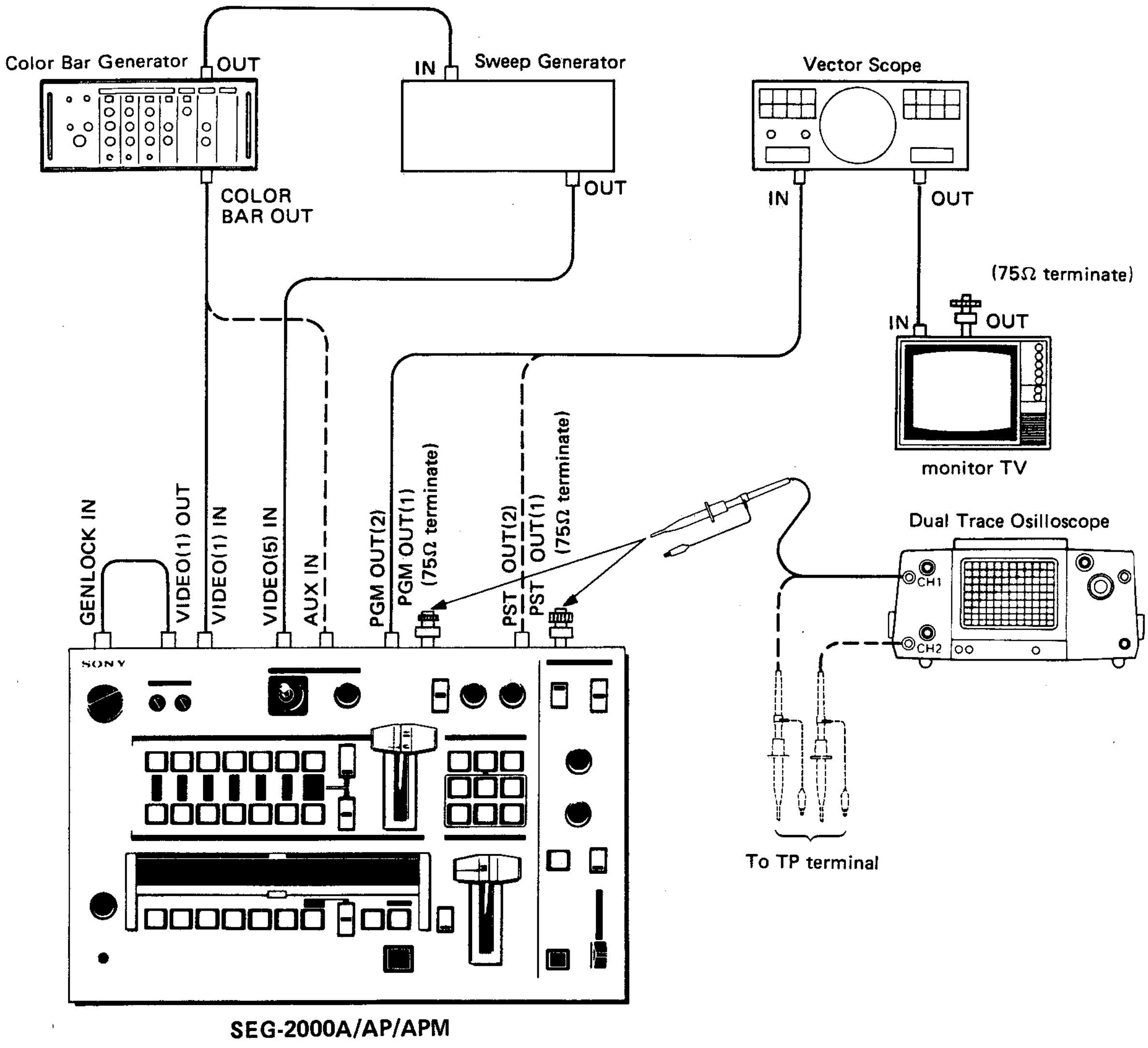
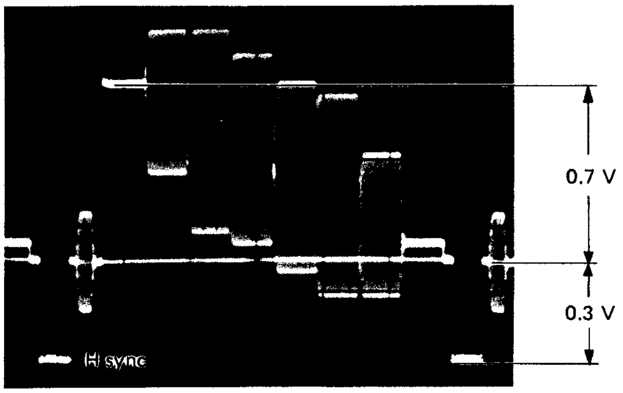

Color Bar Generator
OUT
IN
Sweep Generator
Vector Scope
COLOR BAR OUT
OUT
IN
OUT
(75Ω terminate)
IN
OUT
monitor TV
Dual Trace Osilloscope
CH1
CH2
To TP terminal
GENLOCK IN
VIDEO(1) OUT
VIDEO(1) IN
VIDEO(5) IN
AUX IN
PGM OUT(2)
PGM OUT(1)
(75Ω terminate)
PST OUT(2)
PST OUT(1)
(75Ω terminate)
SONY
SEG-2000A/AP/APM

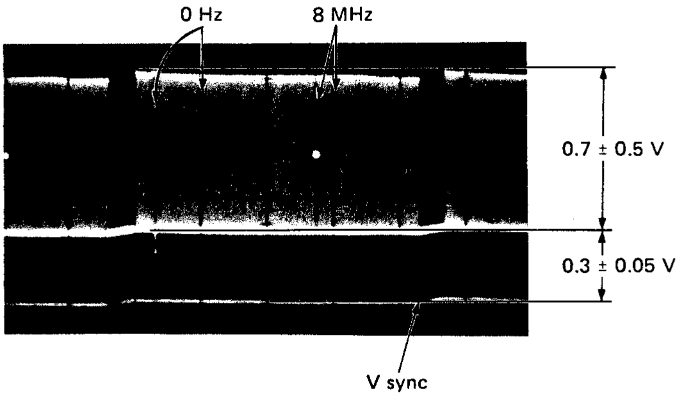
Fig. 9-2. Connection diagram

[Video Signals Required]

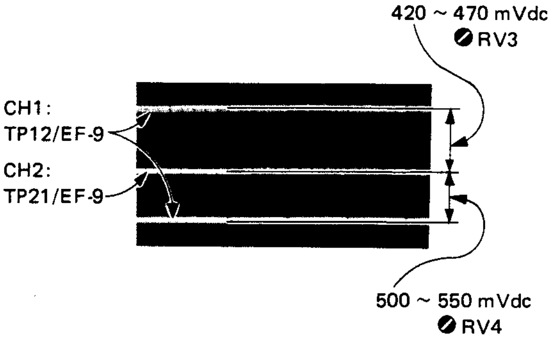
- 75% color bar signal



- Gated Sweep Signal; (To be used only in frequency response adj.)

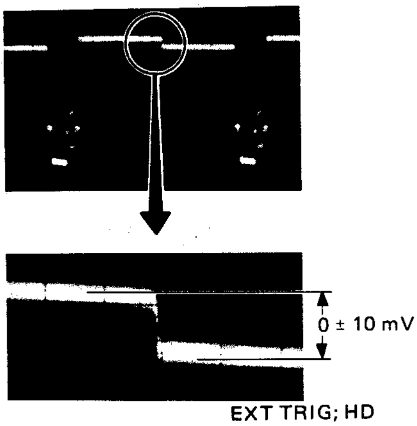


9-1. PGM/PST MIX AMP BLKG BIAS ADJUSTMENT

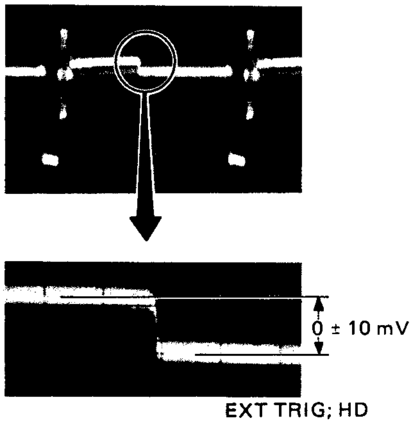
machine conditions for adjustment	measuring point	adjustment
• A BUS selector; BACK GROUND "WHT" • B BUS selector; BACK GROUND "WHT" • PGM/PST switch; PGM • PST BUS selector; EFF • EFFECTS SELECT; WIPE ◨ • SOFT/HARD/BORDER switch; HARD • EFFECTS Lever; center	• Connect CH1 and CH2 of oscilloscope at TP2/EF-9, and set the DC range. Set the PGM/PST MIX lever fully to rear side.  420 ~ 470 mVdc ⊘RV3 CH1: TP12/EF-9 CH2: TP21/EF-9 500 ~ 550 mVdc ⊘RV4 Set the PGM/PST MIX lever fully to front side.	⊘RV3/EF-9 ⊘RV4/EF-9

9-2. A & B BUS VIDEO AMP ADJUSTMENT

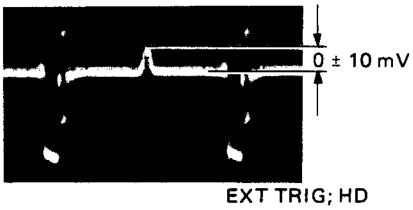
9-2-1. Video Level Adjustment

machine conditions for adjustment	measuring point	adjustment
Same as preceding clause;	PGM OUT-1 /rear panel 	⊘ RV9/EF-9

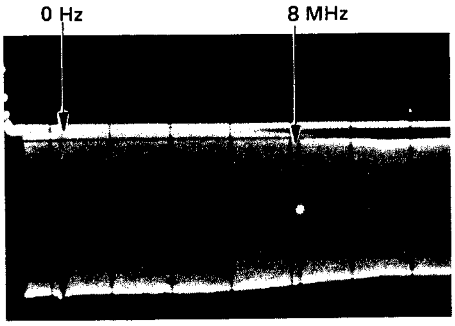
9-2-2. Clamp Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• A BUS selector; # 2 (non-signal) • B BUS selector; # 2 (non-signal) • EFFECTS lever; rear side • PGM/PST MIX lever; front side		⊘ RV7/EF-9

9-2-3. Balance Adjustment

machine conditions for adjustment	measuring point	adjustment
• Same as preceding clause; • SOFT/HARD/BORDER switch; SOFT • SOFTNESS/BORDER control; fully clockwise		⊘ RV8/EF-9

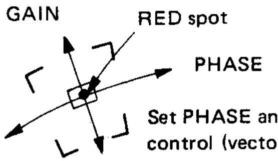
9-2-4. Frequency Response Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr>
<td>
• PGM/PST switch; PGM
• PST BUS selector; EFF
• A BUS selector; # 5 (Sweep Signal)
• B BUS selector; # 2 (non-signal)
• EFFECTS Lever; rear side
• PGM/PST MIX lever; front side
</td>
<td>
TP19/EF-9


<table>
<tr><th>0 Hz</th><th>8 MHz</th></tr>
<tr><td>Refer</td><td>±20 mV</td></tr>
</table>
EXT TRIG; VD
</td>
<td>⊘CV6/EF-9</td>
</tr>
</table>

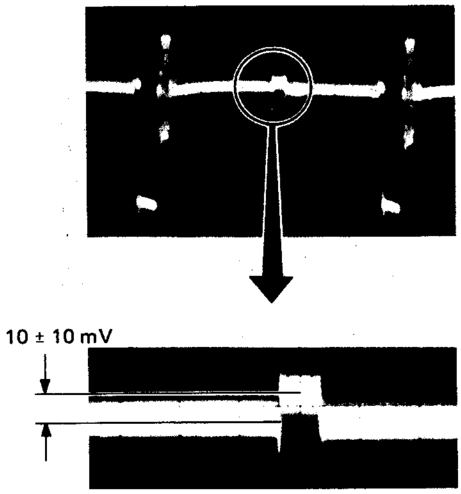
9-2-5. Chroma Signal Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr>
<td rowspan="2">
• PGM/PST switch; PGM
• PST BUS selector; EFF
• A BUS selector; # 1
• B BUS selector; # 1
• EFFECTS SELECT; MIX

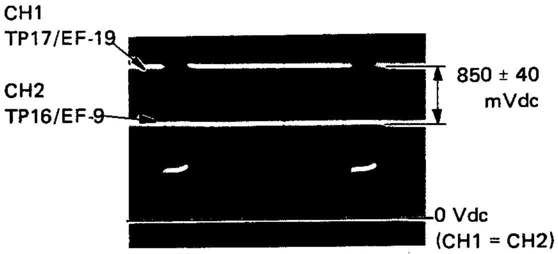
OPERATING MODE SELECTION
/vectorscope
[SEG-2000A]
Depress the VECTOR pushbutton
[SEG-2000AP/APM]
Depress the NTSC pushbutton
</td>
<td>
1. VECTORSCOPE setting;
Set the EFFECTS Lever fully to the rear side.


Set PHASE and GAIN control (vectorscope) for correct RED phase and gain.
PGM OUT-2
/rear panel
</td>
<td></td>
</tr>
<tr>
<td>
2. Chroma Signal Adjustment;
Adjust ⊘CV5 so that the fluctation of RED spot become most minimize when the EFFECTS Lever is changed to rear side from front side two or three times.
</td>
<td>⊘CV5/EF-9</td>
</tr>
</table>

9-3. BORDER BLACK LEVEL ADJUSTMENT

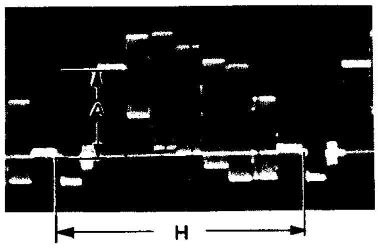
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PST BUS selector; EFF • A BUS selector; # 2 • B BUS selector; # 2 • EFFECTS SELECT; WIPE ◨ • SOFT/HARD/BORDER selector; BORDER • SOFTNESS/BORDER control; fully clockwise • LUM control; fully counterclockwise • EFFECTS lever; center	PGM OUT-1/rear panel  EXT TRIG; HD	⊘ RV10/EF-9

9-4. EFFECT KEY PULSE CLAMP LEVEL ADJUSTMENT

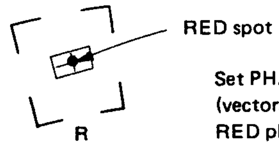
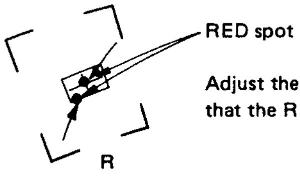
machine conditions for adjustment	measuring point	adjustment
• EFFECTS SELECT; WIPE ◨ • EFFECTS lever; front side	 EXT TRIG; HD	⊘ RV11/EF-9

9-5. C & D BUS VIDEO AMP ADJUSTMENT

9-5-1. C BUS Video Level Adjustment

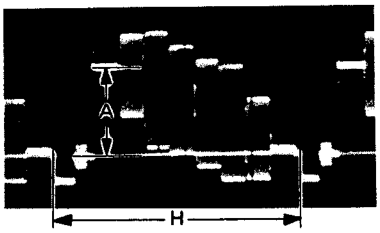
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • A BUS selector; # 1 • B BUS selector; # 1 • EFFECTS Lever; rear side • PGM/PST MIX Lever; front side	1. Measuring of input signal level; Set PST BUS to EFF. PGM OUT-1 /rear panel  Measure the level of "A". EXT TRIG; HD	
	2. Video Level Adjustment; Set PST BUS to # 1. A ± 10 mV	⊘RV1/EF-8

9-5-2. C BUS Chroma Signal Adjustment

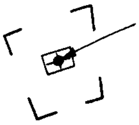
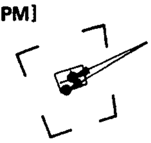
machine conditions for adjustment	measuring point & adjustment	
• A BUS selector; # 1 • B BUS selector; # 1 • EFFECTS lever; rear side • PGM/PST MIX lever; front side • PGM/PST switch; PST OPERATING MODE SELECTION /vectorscope **[SEG-2000A]** Depress the VECTOR pushbutton **[SEG-2000AP/APM]** Depress the NTSC pushbutton	1. VECTORSCOPE setting; Set PST BUS to "EFF".  Set PHASE and GAIN control (vectorscope) for correct RED phase and gain. PST OUT-2 /rear panel	
	2. Chroma Signal Adjustment Change the PST bus to "# 1" and "EFF" alternately repeat two or three times. **[SEG-2000A]** Adjust the ⊘CV1 and ⊘DL1 alternately and repeatly so that the fluctation of RED spot become most minimize. **[SEG-2000APM]**  Adjust the ⊘CV1 and ⊘DL1 alternately and repeatly so that the RED spot become a dot.	⊘CV1/EF-8 ⊘DL1/EF-8

Note: (1) ⊘DL1; Delay Line with tap.
(2) Reference spec; GAIN less than 2.5%
PHASE less than 2.5°

9-5-3. D BUS Video Level Adjustment

machine conditions for adjustment	measuring point	adjustment
● PGM/PST switch; PGM ● A BUS selector; # 1 ● B BUS selector; # 1 ● EFFECTS lever; rear side ● PGM/PST MIX lever; front side	1. Measuring of input signal level; Set PST BUS to EFF. PGM OUT-1 /rear panel  Measure the level of "A" EXT TRIG; HD	
	2. Video Level Adjustment Set PST BUS to # 1. A ± 10 mV	⊘RV2/EF-8

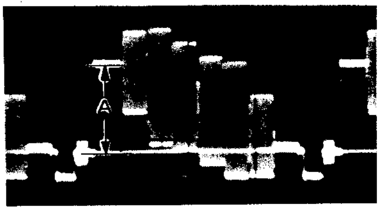
9-5-4. D BUS Chroma Signal Adjustment

machine conditions for adjustment	measuring point & adjustment
● Same as preceading clause; OPERATING MODE SELECTION /vectorscope **[SEG-2000A]** Depress the VECTOR pushbutton **[SEG-2000AP/APM]** Depress the NTSC pushbutton	1. VECTORSCOPE setting; Set PST BUS to EFF.  RED spot. Set PHASE and GAIN control (vectorscope) for correct RED phase and gain. PGM OUT-2 /rear panel
	2. Chroma Signal Adjustment Change the PST bus to # 1 and EFF alternately repeat two or three times. ⊘CV2/EF-8 ⊘DL2/EF-8 **[SEG-2000A]** Adjust the ⊘CV2 and ⊘DL2 alternately and repeatly so that the fluctation of RED spot become most minimize. **[SEG-2000AP/APM]**  RED spot Adjust the ⊘CV2 and ⊘DL2 alternately and repeatly that the RED spot become a dot.

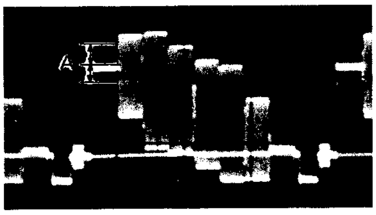
Note: (1) ⊘DL2; Delay Line with tap.
(2) Reference spec; PHASE less than 2.5°
GAIN less than 2.5%

9-6. PGM/PST MIX AMP ADJUSTMENT

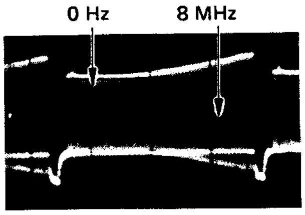
9-6-1. PGM BUS Video Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PST BUS selector; # 1	1. Measuring of input signal level. Set the PGM/PST MIX Lever fully to front side. PGM OUT-1 /rear panel  Measure the level of "A" EXT TRIG; HD	
	2. Video Level Adjustment Set the PGM/PST MIX Lever fully to rear side. A ± 10 mV	⊘ RV6/EF-9

9-6-2. PGM BUS Balance Adjustment

machine conditions for adjustment	measuring point	adjustment
• Same as preceding clause; ;	PGM OUT-1/rear panel  EXT TRIG; HD Adjust for no level fluctation of "A" when the PGM/PST MIX Lever is changed to front side from rear side two or three times. A = 0 ± 10 mV	⊘ RV5/EF-9

9-6-3. PGM BUS Frequency Response Adjustment

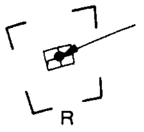
<table>
<tr><th>machine conditions for adjustment</th><th colspan="2">measuring point</th><th>adjustment</th></tr>
<tr>
<td>● PGM/PST switch; PST
● PST BUS selector; # 5 (sweep signal)
● PST BUS selector; # 2 (non-signal)
● PGM/PST MIX lever; front side</td>
<td>TP13/EF-9</td>
<td>


EXT TRIG; VD

<table>
<tr><th>0 Hz</th><th>8 MHz</th></tr>
<tr><td>Refer</td><td>±20 mV</td></tr>
</table>
</td>
<td>⊘ CV4/EF-9</td>
</tr>
</table>

9-6-4. PGM BUS Chroma Signal Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point & adjustment</th></tr>
<tr>
<td rowspan="2">● PGM/PST switch; PST
● PST BUS selector; # 1</td>
<td>
1. VECTORSCOPE setting.
Set the PGM/PST MIX Lever fully to front side.

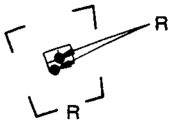


Set PHASE and GAIN control (vectorscope) for correct RED phase and gain.

PGM OUT-2
/rear panel
</td>
</tr>
<tr>
<td>
2. Chroma Signal Adjustment,
Change the PGM/PST MIX Lever fully to front side and rear side alternately and repeatly two or three times.

[SEG-2000A]
Adjust the ⊘ CV3/EF-9 so that the fluctation of RED spot become most minimize.

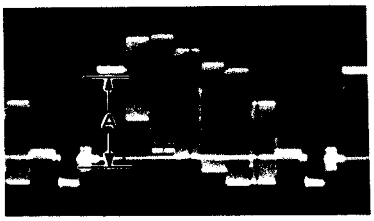
[SEG-2000AP/APM]



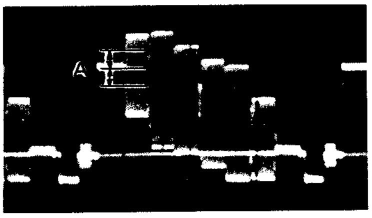
Adjust the ⊘ CV3/EF-9 so that the RED spot become a dot.
</td>
</tr>
</table>

Note: Reference spec; GAIN less than 2.5%
PHASE less than 2.5°

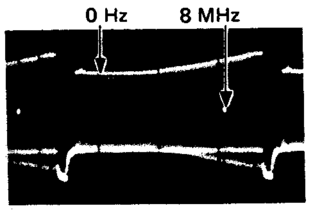
9-6-5. PST BUS Video Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PST BUS selector; # 1	1. Measuring of input signal level. Set the PGM/PST MIX Lever fully to front side. PST OUT-1 /rear panel  EXT TRIG; HD Measure the level of "A"	
	2. Video Level Adjustment. Set the PGM/PST MIX Lever fully to rear side. A ± 10 mV	⊘ RV2/EF-9

9-6-6. PST BUS Balance Adjustment

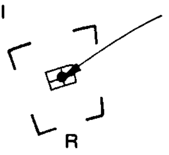
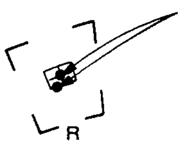
machine conditions for adjustment	measuring point	adjustment
• Same as preceding clause;	PST OUT-1 /rear panel  EXT TRIG; HD Adjust for no level fluctation of "A" when the PGM/PST MIX Lever is changed to front side from rear side two or three times. A = 0 ± 20 mV	⊘ RV1/EF-9

9-6-7. PST BUS Frequency Response Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr><td>• PGM/PST switch; PGM
• PGM BUS selector; # 5 (sweep signal)
• PGM/PST MIX Lever; front side</td><td>TP3/EF-9


EXT TRIG; VD
<table><tr><th>0 Hz</th><th>8 MHz</th></tr><tr><td>Refer</td><td>±20 mV</td></tr></table></td><td>⊘ CV2/EF-9</td></tr>
</table>

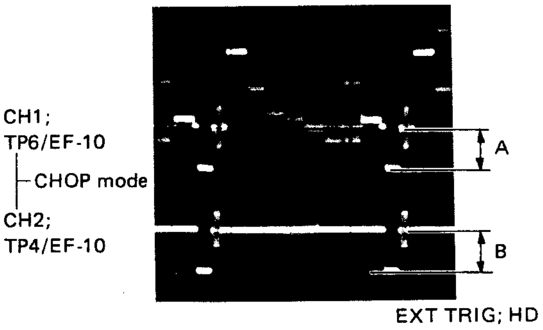
9-6-8. PST BUS Chroma Signal Adjustment

machine conditions for adjustment	measuring point & adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PST BUS selector; # 1	1. VECTORSCOPE setting; Set the PGM/PST MIX Lever fully to front side. PST OUT-2 /rear panel  Set PHASE and GAIN control (vectorscope) for correct RED phase and gain.
	2. Chroma Signal Adjustment Change the PGM/PST MIX Lever fully to front side and rear side alternately and repeatly two or three times. **[SEG-2000A]** Adjust the ⊘ CV1/EF-9 so that the fluctation of RED spot become most minimize. **[SEG-2000AP/APM]**  Adjust the ⊘ CV1/EF-9 so that the RED spot become a dot.

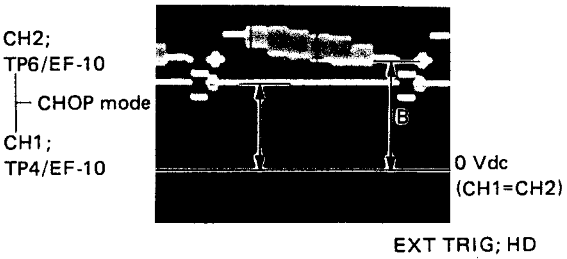
9-7. BURST REPLACEMENT AMP ADJUSTMENT

Note: Perform the sec. 8-4 Black Burst Adjustment (1) and the sec. 8-5 Black Burst Adjustment (2) befor starting this adjustment.

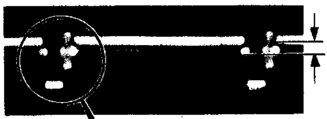
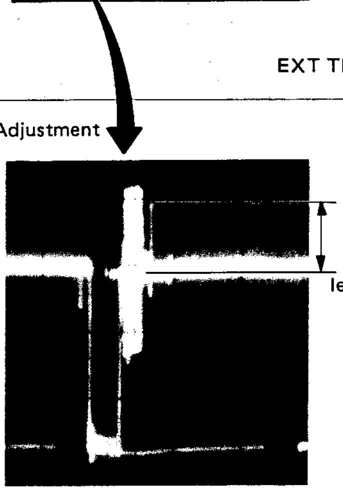
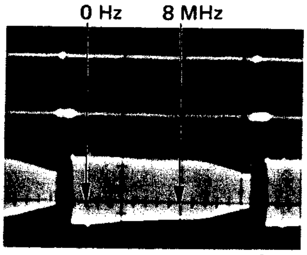
9-7-1. Black Burst Sync Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PGM/PST MIX Lever; front side	 B = A ± 10 mV	⊘ RV4/EF-10

9-7-2. PGM BUS Clamp Level Adjustment

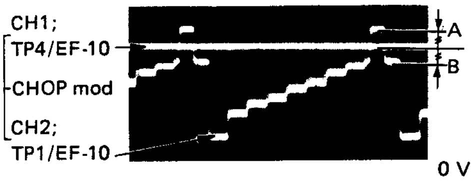
machine conditions for adjustment	measuring point	adjustment
• Same as preceding clause;	 A = B ± 10 mVdc	⊘ RV5/EF-10

9-7-3. PGM BUS Burst Replacement Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr><td rowspan="2">• PGM/PST switch; PGM
• PGM/PST MIX Lever; front side
• PGM BUS selector; # 2 (non-signal)</td><td>1. Gain Adjustment
PGM OUT-1
/rear panel

10 ± 10 mV
EXT TRIG; HD</td><td>⊘ RV7/EF-10</td></tr>
<tr><td>2. Balance Adjustment

less than
30 mV</td><td>⊘ RV6/EF-10</td></tr>
<tr><td>• PGM/PST switch; PGM
• PGM BUS selector; # 5
(sweep signal)
• PGM/PST MIX Lever; rear side</td><td>3. Frequency Response Adjustment
TP9/EF-10


<table><tr><th>0 Hz</th><th>8 MHz</th></tr><tr><td>Refer</td><td>±20 mV</td></tr></table>EXT TRIG; VD</td><td>⊘ CV4/EF-10</td></tr>
</table>

9-7-4. PST BUS Clamp Level Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr><td>• PGM/PST switch; PGM
• PGM BUS selector; # 1
• PGM/PST MIX Lever; front side</td><td>

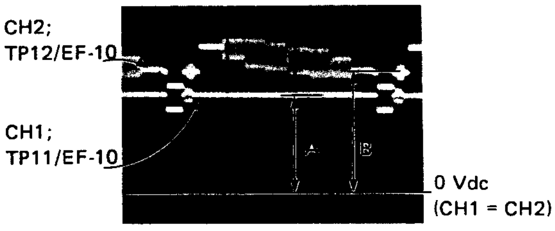
A = B
0 Vdc
(CH1 = CH2)
EXT TRIG; HD</td><td>⊘ RV1/EF-10</td></tr>
</table>

9-7-5. Sync (2) Level Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr><td>

- PGM/PST switch; PGM
- PGM BUS selector; # 1
- PGM/PST MIX Lever; front side

</td><td>



EXT TRIG; HD

A = B ± 20 mVdc

</td><td>⊘RV11/EF-10</td></tr>
</table>

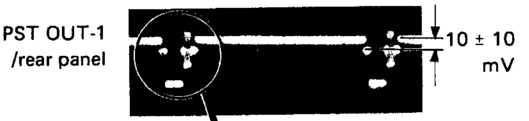
9-7-6. PST BUS Burst Replacement Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr><td rowspan="3">

- PGM/PST switch; PGM
- PGM BUS selector; # 2 (non-signal)
- PGM/PST MIX Lever; front side

</td><td>

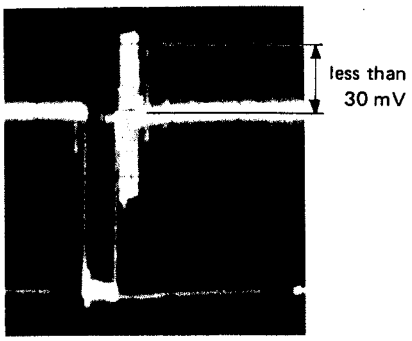
1. Gain Adjustment



EXT TRIG; HD

</td><td>⊘RV3/EF-10</td></tr>
<tr><td>

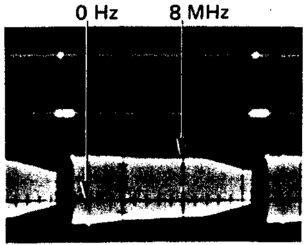
2. Balance Adjustment



</td><td>⊘RV2/EF-10</td></tr>
<tr><td>

3. Frequency Response Adjustment

TP5/EF-10



EXT TRIG; VD

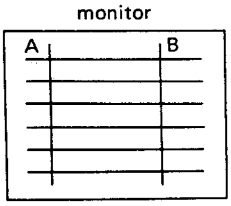
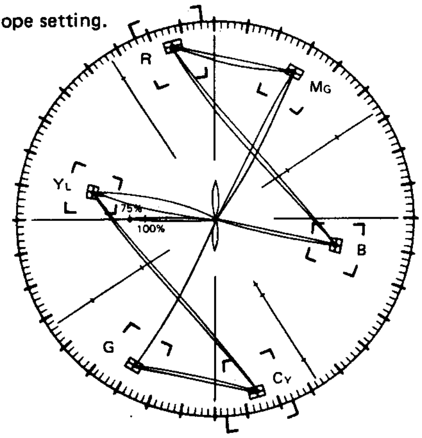
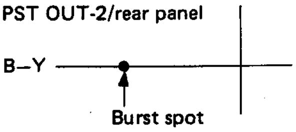
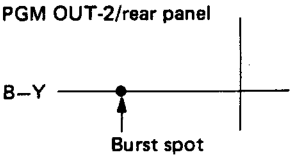
</td><td>⊘CV2/EF-10</td></tr>
</table>

0 Hz	8 MHz
Refer	±20 mV

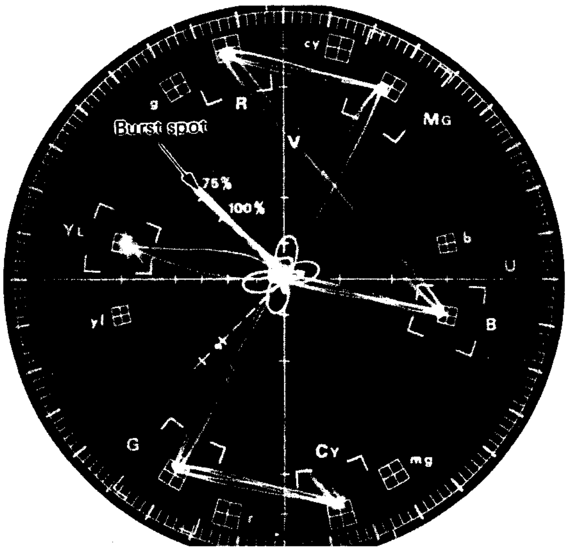
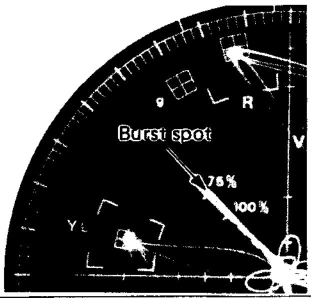
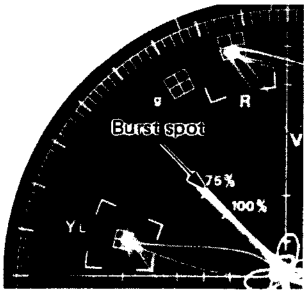
9-7-7. Burst Phase Adjustment

Note: Perform the sec. 7-5 SC Phase Indication Adjustment (1) before starting this adjustment.

[For SEG-2000A use]

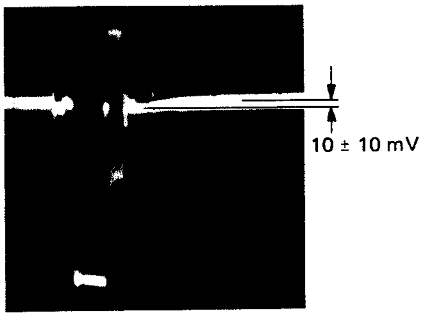
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PST BUS selector; # 1 • PGM/PST MIX Lever; front side • SC PHASE 0°/180° switch/rear panel; 0° • PHASE INDICATION switch; ON	1. SC PHASE INDICATION Adjustment ⊘ RV8/EF-10 → fully to counterclockwise PST OUT-2 /rear panel  **step 1.** Adjust the ⊘ RV9 to voluntary position so that the longitudinal line of "B" is appeared on monitor screen. **step 2.** Adjust the ⊘ SC PHASE so that the longitudinal line of "B" is most nearly to the longitudinal line of "A".	⊘ RV9/EF-10 ⊘ SC PHASE/rear panel
	2. Vectorscope setting.  Set the "PHASE" (vectorscope) so that the each chroma spot come within specified each zone.	
	3. PST BUS Burst Phase Adjustment PST OUT-2/rear panel  Adjust so that the Burst spot comes on B–Y 180° Axis.	⊘ CV1/EF-10
	4. PGM BUS Burst Phase Adjustment PGM OUT-2/rear panel  **step 1.** Perform the (2) Vectorscope setting. **step 2.** Adjust so that the Burst spot comes on B–Y 180° Axis.	⊘ CV3/EF-10

[For SEG-2000AP/APM]

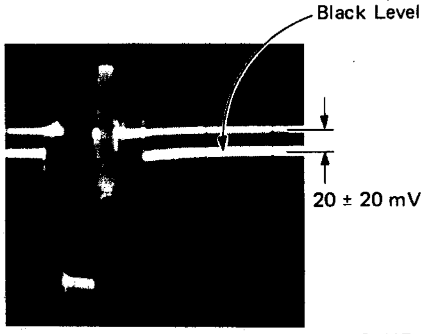
machine conditions for adjustment	measuring point & adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PST BUS selector; # 1 • PGM/PST MIX Lever; front side • SC PHASE 0°/180° switch; 0° • PHASE INDICATION switch; ON OPERATING MODE SELECTION /vectorscope; NTSC mode	1. SC PHASE INDICATION Adjustment; Same as adjustment for SEG-2000A use.
	2. Vectorscope setting; Set the "PHASE (Vectorscope)" so that the chroma spots of ±V come within specified each zone "⊞".  cy g R MG Burst spot V 75% 100% YL b U yl B G CY mg
	3. PST BUS Burst Phase Adjustment PST OUT-2 /rear panel  g R Burst spot V 75% 100% YL Adjust the ⊘ CV1/EF-10 so that the Burst spot become a dot.
	4. PGM BUS Burst Phase Adjustment PGM OUT-2 /rear panel  g R Burst spot V 75% 100% YL Adjust the ⊘ CV3/EF-10 so that the Burst spot become a dot.

9-8. DSK AMP ADJUSTMENT

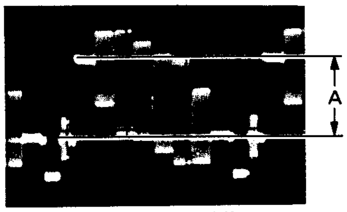
9-8-1. PGM BUS Clamp Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 2 (non-signal) • DSK KEY LEVEL control; fully to clockwise • INSERT LEVEL control; fully to counterclockwise • NORMAL/INVERT switch; NORMAL • PGM CUT IN/OUT switch; ON	PGM OUT-1 /rear panel  EXT TRIG; HD	⊘ RV7/DK-4

9-8-2. PGM BUS Balance Adjustment

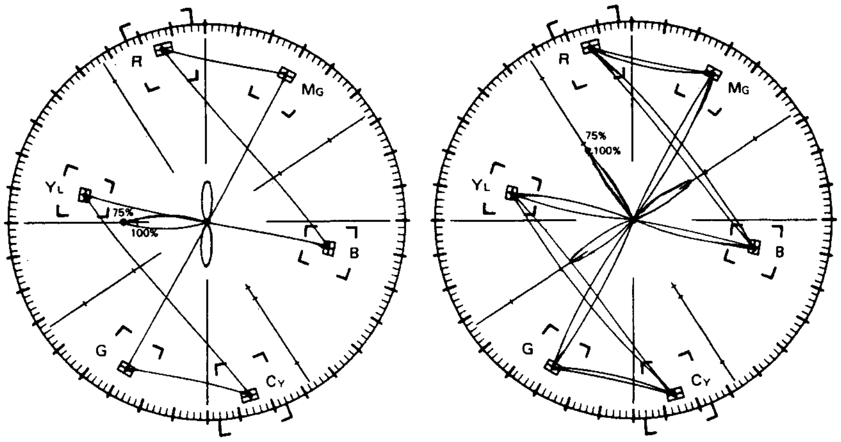
machine conditions for adjustment	measuring point	adjustment
Same as preceding clause; ⬇ • PGM CUT IN/OUT switch; OFF	Operate the "PGM ◂▸ INSERT" control to rear side from front side alternately two or three times. PGM OUT-1 /rear panel  EXT TRIG; HD	⊘ RV8/DK-4

9-8-3. PGM BUS Video Level Adjustment

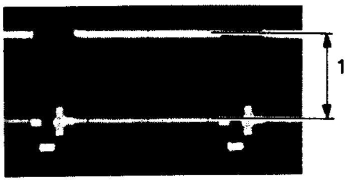
machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PGM/PST MIX Lever; front side	1. Measuring of Input signal level VIDEO OUT-1 /rear panel  Measure the level of "A" EXT TRIG; HD	
	2. Video Level Adjustment PGM OUT-1/rear panel A ± 10 mV	⊘ RV9/DK-4

9-8-4. PGM BUS Frequency Response Adjustment

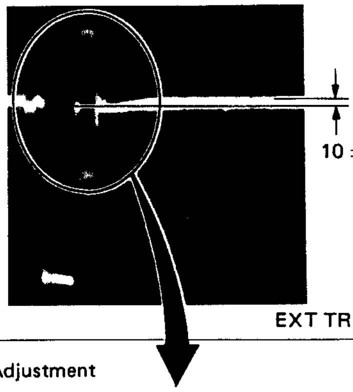
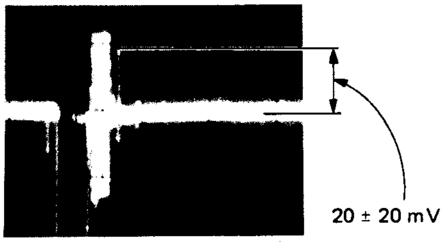
Note: Be sure that the Input video signal is the correct 75% color bar signal.

machine conditions for adjustment	measuring point & adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 1 • PGM/PST MIX Lever; front side	PGM OUT-2/rear panel.  [SEG-2000A] [SEG-2000AP/APM] Adjust the ⊘ CV2/DK-4 so that the each chroma spots come within specified each zone. "⊞".

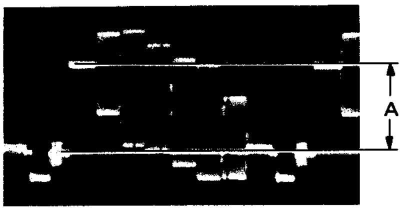
9-8-5. INSERT Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; # 2 (non-signal) • DSK KEY LEVEL control; fully to clockwise • NORMAL/INVERT switch; NORMAL • PGM CUT IN/OUT switch; ON	PGM OUT-1 /rear panel  EXT TRIG; HD	⊘ RV1/DK-4

9-8-6. PST BUS Clamp Level Adjustment

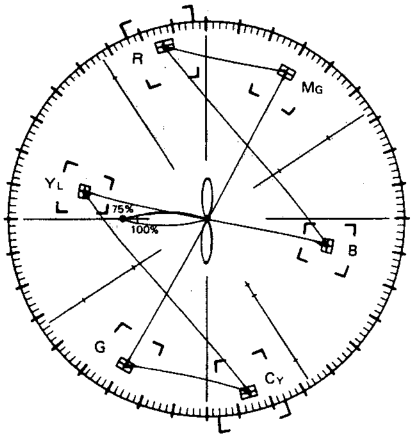
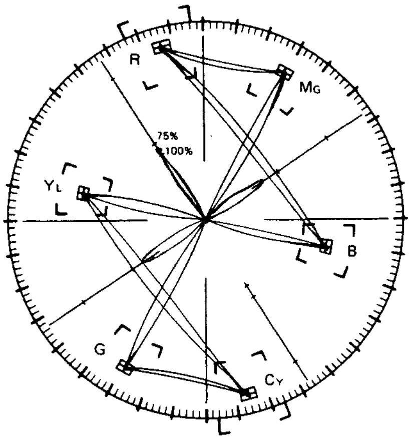
machine conditions for adjustment	measuring point	adjustment
● PGM/PST switch; PST ● PST BUS selector; # 2 (non-signal) ● PST CUT IN/OUT switch; ON ● NORMAL/INVERT switch; NORMAL ● DSK KEY LEVEL control; fully to clockwise ● INSERT LEVEL control; fully to counterclockwise	1. Clamp Level Adjustment PST OUT-1 /rear panel  EXT TRIG; HD	⊘ RV3/DK-4
	2. Balance Adjustment  	⊘ RV4/DK-4

9-8-7. PST BUS Video Level Adjustment

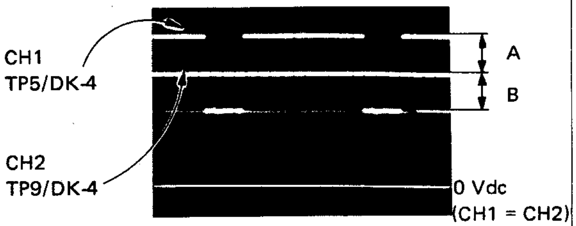
machine conditions for adjustment	measuring point	adjustment
● PGM/PST switch; PST ● PST BUS selector; # 1 ● PGM/PST MIX Lever; front side	1. Measuring of Input signal level. VIDEO OUT-1 /rear panel  Measure the level of "A" EXT TRIG; HD	
	2. Video Level Adjustment PST OUT-1/rear panel A ± 10 mV	⊘ RV5/DK-4

9-8-8. PST BUS Frequency Response Adjustment

Note: Be sure that the Input video signal is the correct 75% color bar signal.

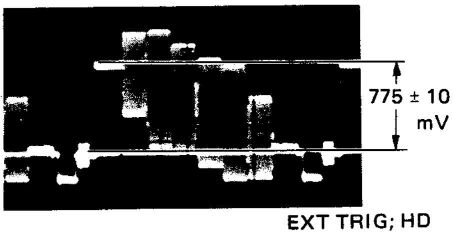
machine conditions for adjustment	**measuring point & adjustment**
• PGM/PST switch; PST • PST BUS selector; # 1 • PGM/PST MIX Lever; front side	PST OUT-2/rear panel  [SEG-2000A]  [SEG-2000AP/APM] Adjust the ⊘ CV1/DK-4 so that the each chroma spots come within specified each zone "⊞".

9-8-9. DSK Key Pulse Clamp Level Adjust

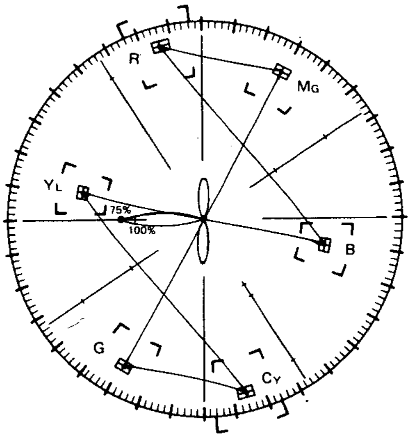
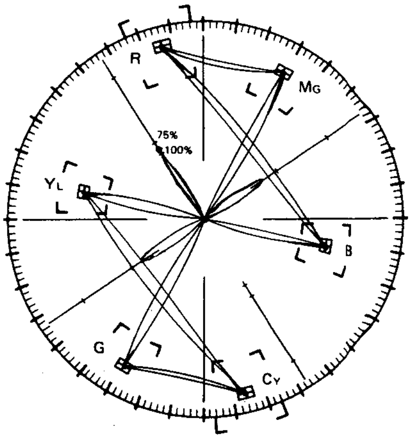
machine conditions for adjustment	**measuring point**	**adjustment**
• PGM/PST switch; PGM • PST BUS selector; Except AUX • DSK KEY LEVEL control; fully to clockwise • NORMAL/INVERT switch; NORMAL • SHADOW switch; OFF • PST CUT IN/OUT switch; ON	 CH1 TP5/DK-4 CH2 TP9/DK-4 A B 0 Vdc (CH1 = CH2) A = B	⊘ RV2/DK-4

9-9. AUX AMP ADJUSTMENT

9-9-1. AUX Video Level Adjustment

machine conditions for adjustment	measuring point	adjustment
• PGM/PST switch; PGM • PGM BUS selector; AUX AUX IN; 75% color bar signal	PGM OUT-1 /rear panel  775 ± 10 mV EXT TRIG; HD	⊘ RV10/EF-10

9-9-2. AUX Frequency Response Adjustment

machine conditions for adjustment	measuring point & adjustment
Same as preceding clause.	PGM OUT-2/rear panel  R MG YL 75% 100% B G CY [SEG-2000A]  R MG 75% 100% YL B G CY [SEG-2000AP/APM] Adjust the ⊘ CV5/EF-10 so that the each chroma spots come within specified each zone. "⊞".

9-10. DG·DP ADJUSTMENT

[Equipment Required]

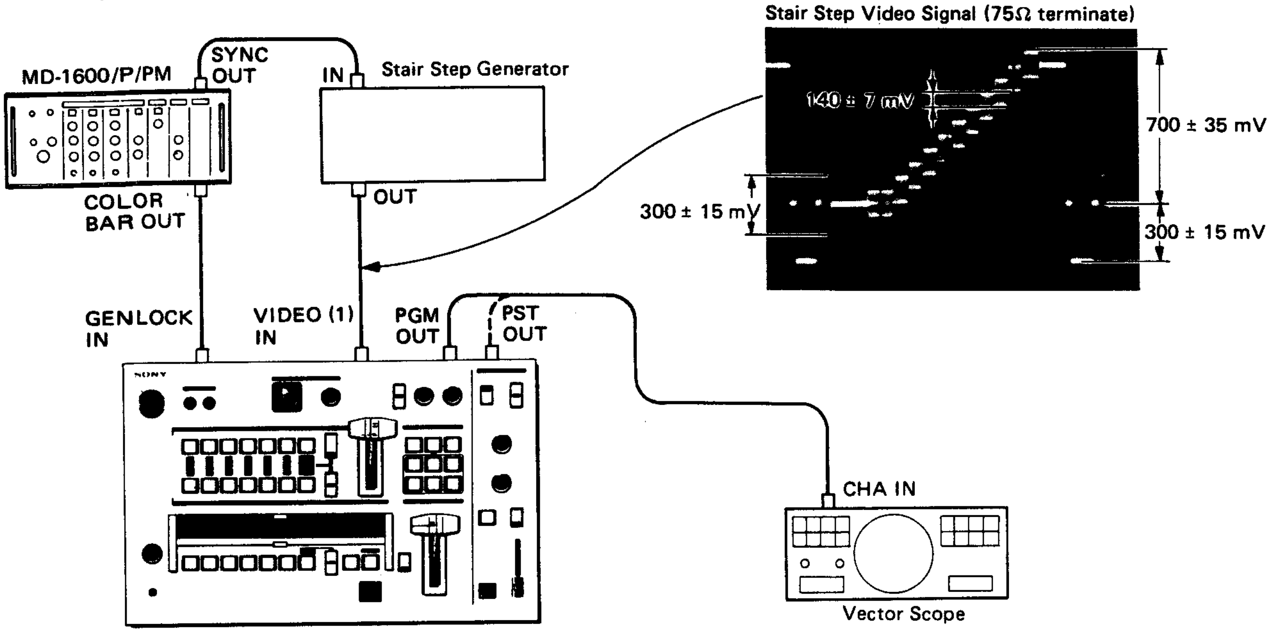

Stair Step Video Signal (75Ω terminate)
MD-1600/P/PM
SYNC OUT
IN
Stair Step Generator
COLOR BAR OUT
OUT
140 ± 7 mV
700 ± 35 mV
300 ± 15 mV
300 ± 15 mV
GENLOCK IN
VIDEO (1) IN
PGM OUT
PST OUT
CHA IN
Vector Scope

Fig. 9-3. Connection & ten-step modulated staircase linearity signal

[DG·DP MEASUREMENT]

Note: Make use of Tektronix type 520A.

1. DG (DIFF. GAIN) Measurement

Change the signal source to the ten-step modulated-staircase linearity signal; see Fig. 9-3. Depress VECTOR pushbutton, change the CHANNEL A GAIN switch to MAX GAIN, and adjust CHANNEL A GAIN control to place the staircase vector tip on the outer ring of the vector graticule (disregard the burst vector). Check that Aϕ, FULL FIELD and CH A pushbuttons are still engaged. Depress the Y pushbutton. A luminance staircase waveform is displayed.

Depress the DIFF GAIN pushbutton and use the VERT POSITION control to place the left side of the trace on the 0 graticule line (scale on right). Each vertical marker indicates one linearity step, making it possible to measure differential gain between any two points on the staircase.

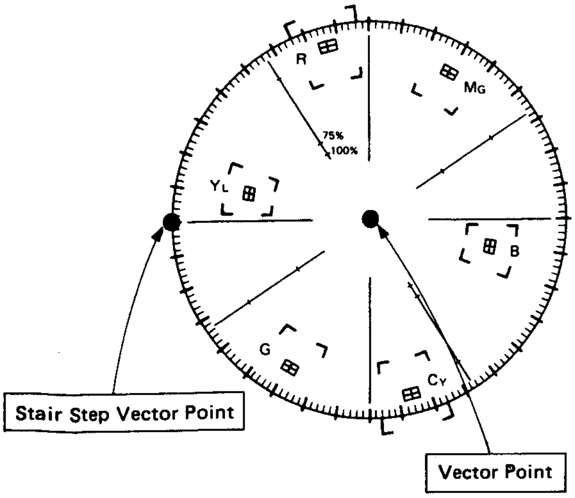

R
MG
75%
100%
YL
B
G
CY
Stair Step Vector Point
Vector Point

Fig. 9-4. Ten-step luminance staircase waveform

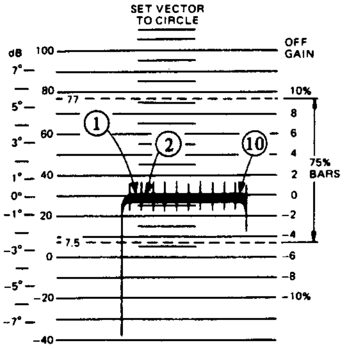

SET VECTOR TO CIRCLE
OFF GAIN
dB
100
80
77
60
40
20
7.5
0
-20
-40
7°
5°
3°
1°
0°
-1°
-3°
-5°
-7°
10%
8
6
4
2
0
-2
-4
-6
-8
-10%
75% BARS
①
②
⑩

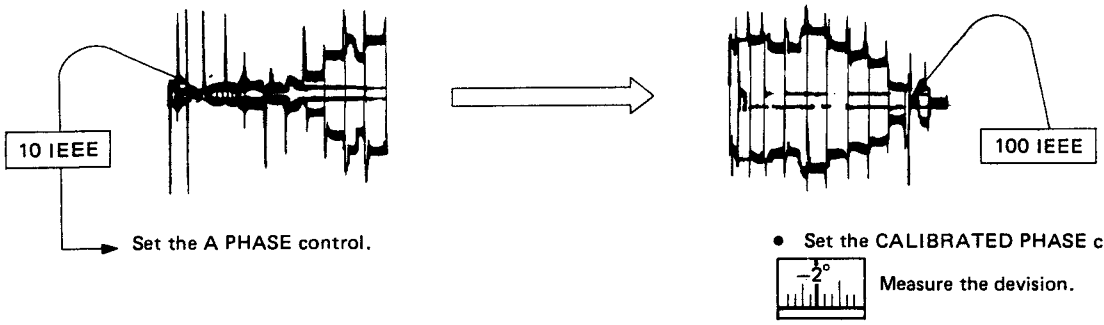
Fig. 9-5. No differential gain over a ten-step staircase

2. DP (DIFF. PHASE) Measurement

Depress the VECTOR pushbutton, set the CHANNEL A gain switch to MAX GAIN and adjust the GAIN control to place the staircase vector on the graticule outer ring (disregard the burst vector). Set the CALIBRATED PHASE dial to 0. Set the DIFF PHASE slide switch to DOUBLE. Depress the DIFF PHASE pushbutton and adjust the CHANNEL A PHASE control for a null at the first staircase step.

Differential phase may be measured peak to peak, from the first step (black level) to the last step (white level) or step to step. If a ramp waveform is used, the measurement should be made from the initial null to the peak amplitude.

Since a null is now present at the black level, simply adjust the CALIBRATED PHASE control until a null occurs at the point where the differential phase is to be measured. The CALIBRATED PHASE dial now reads the differential phase between the black level and the selected level. If differential phase between two other points is to be made, null one of the levels and read the dial, then null the other level and subtract the smaller reading from the larger to provide the differential phase between the two levels.



Set the A PHASE control.

- Set the CALIBRATED PHASE control;

Measure the devision.

9-10-1. PGM BUS DG·DP Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr><td>• A BUS selector; # 1
• B BUS selector; # 1
• EFFECTS SELECT; MIX
• EFFECTS Lever; rear side
• PGM/PST MIX Lever; rear side</td><td>PGM OUT-1/rear panel
Spec.<table><tr><th>APL</th><th>DG</th><th>DP</th></tr><tr><td>10%</td><td>less than 1.5%</td><td>less than 1.5°</td></tr><tr><td>90%</td><td>less than 1.5%</td><td>less than 1.5°</td></tr></table>The specified value should be satisfied whenever the PGM BUS is in the # 1 and # EFF position.</td><td>⊘RV10/DK-4</td></tr>
</table>

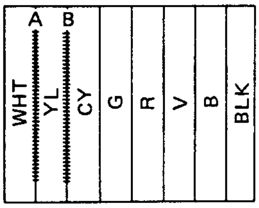
9-10-2. PST BUS DG·DP Adjustment

<table>
<tr><th>machine conditions for adjustment</th><th>measuring point</th><th>adjustment</th></tr>
<tr><td>• Same as preceding clause;</td><td>PST OUT-1/rear panel
Spec.<table><tr><th>APL</th><th>DG</th><th>DP</th></tr><tr><td>10%</td><td>less than 1.5%</td><td>less than 1.5°</td></tr><tr><td>90%</td><td>less than 1.5%</td><td>less than 1.5°</td></tr></table>The specified value should be satisfied whenever the PST BUS is in the # 1 and # EFF position.</td><td>⊘RV6/DK-4</td></tr>
</table>

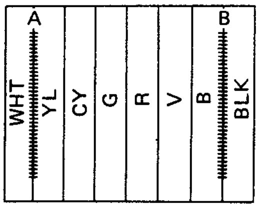
9-11. SC PHASE INDICATION ADJUSTMENT (2)

Note: Perform the sec. 7-5 SC PHASE INDICATION Adjustment (1) before starting this adjustment.

9-11-1. Bias Adjustment

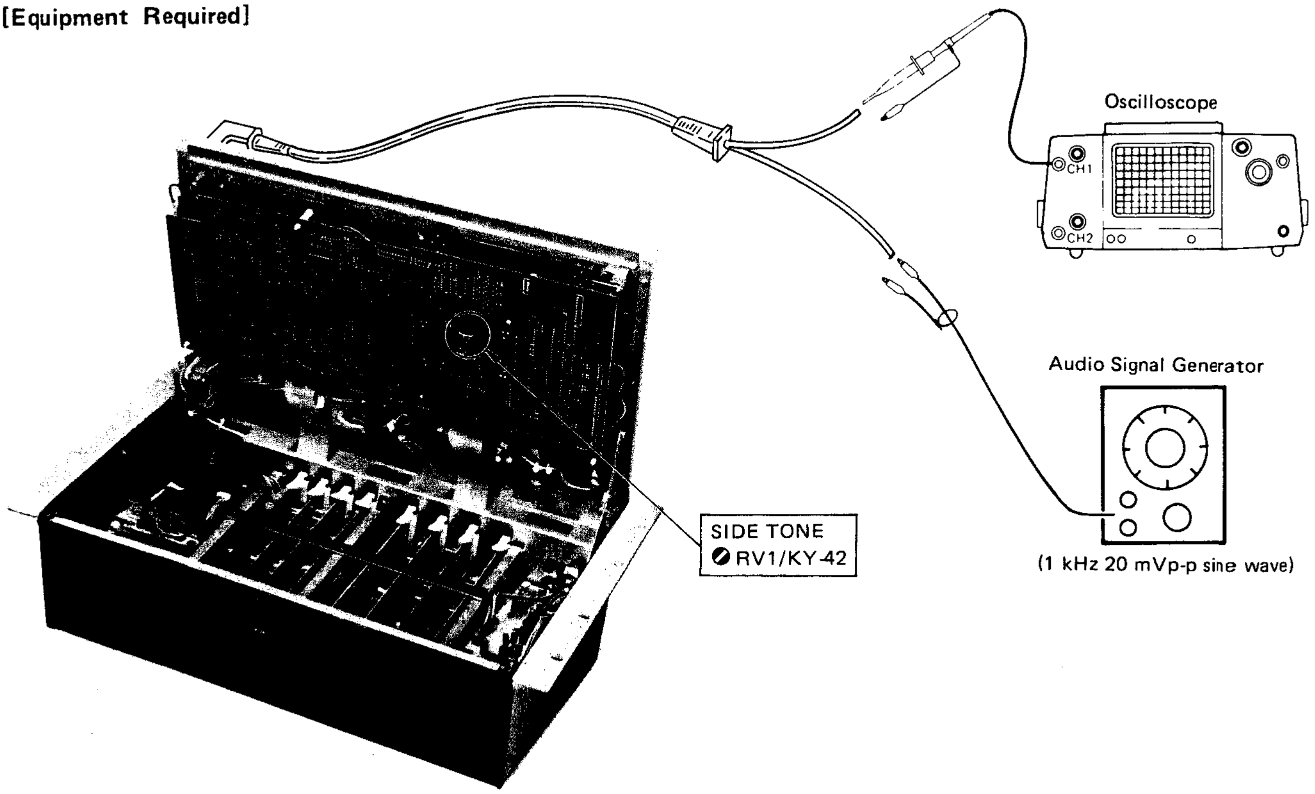
machine conditions for adjustment	measuring point	adjustment
• PST BUS selector; # 1 • PGM BUS selector; # 1 • PGM/PST switch; PGM • PGM/PST MIX Lever; front side • PHASE INDICATION switch; ON • SC PHASE 0°/180° switch/rear panel; 0°	PST OUT-2/rear panel monitor  **step 1.** Set the ⊘ SC PHASE/rear panel so that the longitudinal line of "B" nears to the most left side. **step 2.** Adjust the ⊘ RV9 so that the longitudinal line of "B" is positioned between Yellow and Cyanogen.	⊘ RV9/EF-10

9-11-2. Limit Level Adjustment

machine conditions for adjustment	measuring point	adjustment
Same as preceding clause; ⬇ • SC PHASE 0°/180° switch/rear panal; 180°	PST OUT-2/rear panel monitor  **step 1.** Set the ⊘ SC PHASE/rear panel so that the longitudinal line of "B" nears to the most right side. **step 2.** Adjust the ⊘ RV12 so that the longitudinal line of "B" is positioned between BLUE and BLACK.	⊘ RV12/EF-10

9-12. INTERCOM LEVEL ADJUSTMENT

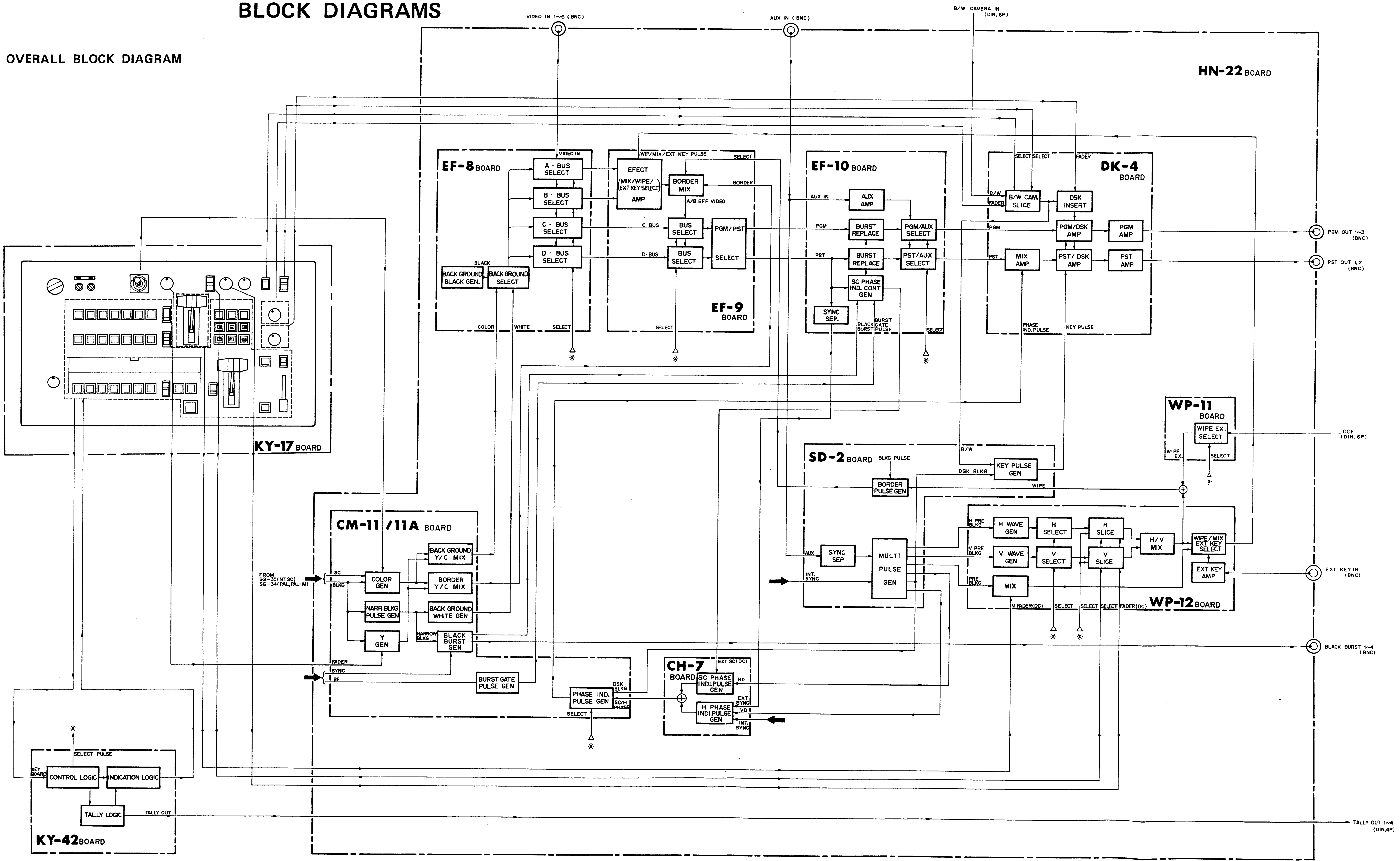
[Equipment Required]


Oscilloscope
CH1
CH2
Audio Signal Generator
(1 kHz 20 mVp-p sine wave)
SIDE TONE
⊘ RV1/KY-42

machine conditions for adjustment	measuring point	adjustment
INTERCOM LEVEL control; fully to clockwise	INTERCOM OUT/Phone Jack 5.2V ± 0.1Vp-p	⊘ RV1/KY-42

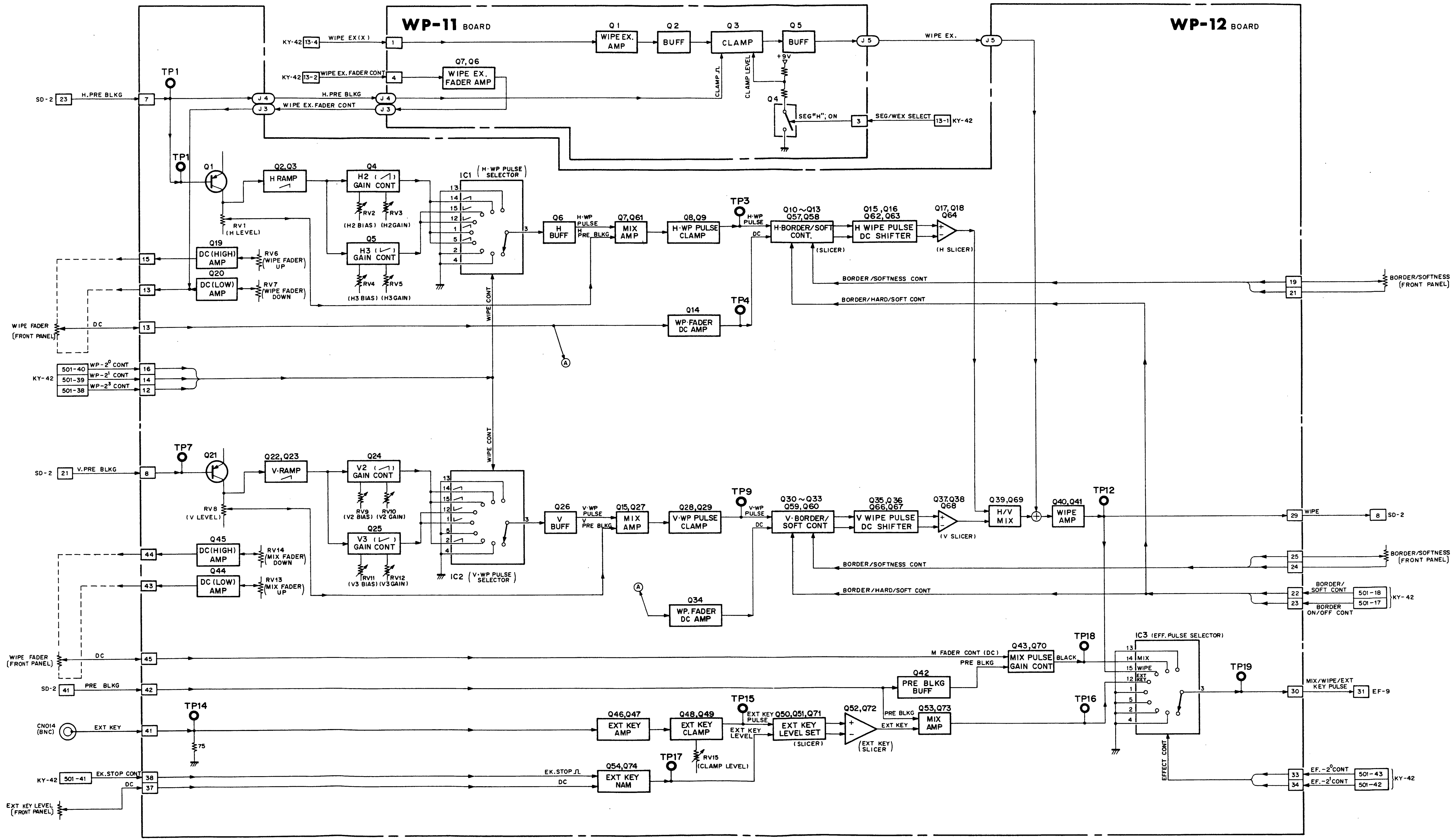
SECTION 10
BLOCK DIAGRAMS

OVERALL BLOCK DIAGRAM


VIDEO IN 1~6 (BNC)
AUX IN (BNC)
B/W CAMERA IN (DIN, 6P)
HN-22 BOARD
EF-8 BOARD
VIDEO IN
A · BUS SELECT
B · BUS SELECT
C · BUS SELECT
D · BUS SELECT
BLACK
BACK GROUND BLACK GEN.
BACK GROUND SELECT
COLOR
WHITE
SELECT
※
WIP/MIX/EXT KEY PULSE
SELECT
EFECT (MIX/WIPE/ EXT KEY SELECT) AMP
BORDER MIX
BORDER
A/B EFF VIDEO
C · BUS
D · BUS
BUS SELECT
BUS SELECT
PGM/PST SELECT
EF-9 BOARD
SELECT
※
EF-10 BOARD
AUX IN
AUX AMP
PGM
BURST REPLACE
PGM/AUX SELECT
PST
BURST REPLACE
PST/AUX SELECT
SC PHASE IND. CONT GEN
SYNC SEP.
BLACK BURST
BURST GATE PULSE
SELECT
※
SELECT SELECT
FADER
DK-4 BOARD
B/W
FADER
B/W CAM. SLICE
DSK INSERT
PGM
PGM/DSK AMP
PGM AMP
PST
MIX AMP
PST/ DSK AMP
PST AMP
PHASE IND. PULSE
KEY PULSE
PGM OUT 1~3 (BNC)
PST OUT 1,2 (BNC)
KY-17 BOARD
WP-11 BOARD
WIPE EX. SELECT
WIPE EX.
SELECT
※
CCF (DIN, 6P)
SD-2 BOARD
BLKG PULSE
BORDER PULSE GEN
B/W
DSK BLKG
KEY PULSE GEN
WIPE
AUX
SYNC SEP
INT. SYNC
MULTI PULSE GEN
H PRE BLKG
V PRE BLKG
PRE BLKG
H WAVE GEN
V WAVE GEN
MIX
H SELECT
V SELECT
H SLICE
V SLICE
H/V MIX
WIPE/MIX EXT KEY SELECT
EXT KEY AMP
M FADER(DC)
SELECT
SELECT
SELECT
FADER(DC)
WP-12 BOARD
※
※
EXT KEY IN (BNC)
BLACK BURST 1~4 (BNC)
CM-11 /11A BOARD
FROM SG-35(NTSC) SG-34(PAL, PAL-M)
SC
BLKG
COLOR GEN
NARR.BLKG PULSE GEN
Y GEN
BACK GROUND Y/C MIX
BORDER Y/C MIX
BACK GROUND WHITE GEN
NARROW BLKG
BLACK BURST GEN
FADER
SYNC
BF
BURST GATE PULSE GEN
PHASE IND. PULSE GEN
DSK BLKG
SC/H PHASE
SELECT
※
CH-7 BOARD
EXT SC(DC)
SC PHASE INDI.PULSE GEN
HD
EXT SYNC
H PHASE INDI.PULSE GEN
VD
INT. SYNC
※
SELECT PULSE
KEY BOARD
CONTROL LOGIC
INDICATION LOGIC
TALLY LOGIC
TALLY OUT
KY-42 BOARD
TALLY OUT 1~4 (DIN, 4P)

OVERALL BLOCK
SEG-2000A (J)
SEG-2000A (U/C),
SEG-2000AP (AEP)
SEG-2000AP (UK)
SEG-2000APM(BRZ)

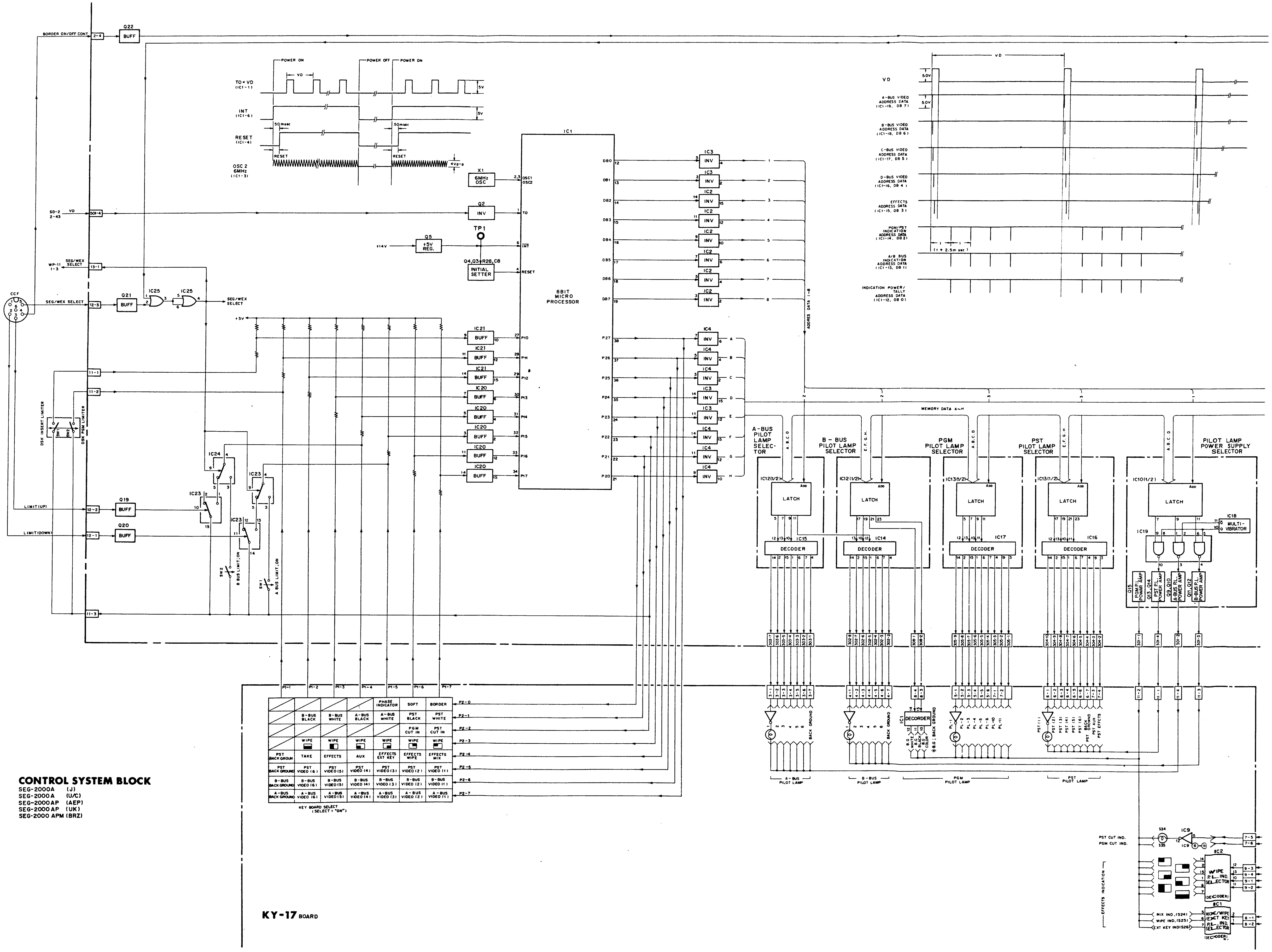
WIPE SYSTEM BLOCK DIAGRAM


WP-11 BOARD
WP-12 BOARD
KY-42 13-4 WIPE EX(X)
KY-42 13-2 WIPE EX. FADER CONT
Q1 WIPE EX. AMP
Q2 BUFF
Q3 CLAMP
Q5 BUFF
Q7, Q6 WIPE EX. FADER AMP
CLAMP
CLAMP LEVEL
+9V
Q4 SEG"H"; ON
SEG/WEX SELECT 13-1 KY-42
WIPE EX.
J5
J4
J3
SD-2 23 H.PRE BLKG
H.PRE BLKG
WIPE EX. FADER CONT
TP1
Q1
Q2, Q3 H RAMP
Q4 H2 GAIN CONT
RV2 RV3 (H2 BIAS) (H2GAIN)
Q5 H3 GAIN CONT
RV4 RV5 (H3 BIAS) (H3GAIN)
RV1 (H LEVEL)
IC1 (H-WP PULSE SELECTOR)
Q19 DC(HIGH) AMP
RV6 (WIPE FADER UP)
Q20 DC(LOW) AMP
RV7 (WIPE FADER DOWN)
WIPE FADER (FRONT PANEL)
DC
Q6 H BUFF
H-WP PULSE
H PRE BLKG
Q7, Q61 MIX AMP
Q8, Q9 H-WP PULSE CLAMP
TP3
Q10~Q13 Q57, Q58 H-BORDER/SOFT CONT.
(SLICER)
Q15, Q16 Q62, Q63 H WIPE PULSE DC SHIFTER
Q17, Q18 Q64
(H SLICER)
BORDER/SOFTNESS CONT
BORDER/HARD/SOFT CONT
BORDER/SOFTNESS (FRONT PANEL)
Q14 WP-FADER DC AMP
TP4
WIPE CONT
A
KY-42 501-40 WP-2⁰ CONT
501-39 WP-2¹ CONT
501-38 WP-2² CONT
TP7
Q21
SD-2 21 V.PRE BLKG
Q22, Q23 V-RAMP
Q24 V2 GAIN CONT
RV9 RV10 (V2 BIAS) (V2 GAIN)
Q25 V3 GAIN CONT
RV11 RV12 (V3 BIAS) (V3 GAIN)
RV8 (V LEVEL)
IC2 (V-WP PULSE SELECTOR)
Q45 DC(HIGH) AMP
RV14 (MIX FADER DOWN)
Q44 DC(LOW) AMP
RV13 (MIX FADER UP)
Q26 V BUFF
V-WP PULSE
V PRE BLKG
Q15, Q27 MIX AMP
Q28, Q29 V-WP PULSE CLAMP
TP9
Q30~Q33 Q59, Q60 V-BORDER/SOFT CONT
Q35, Q36 Q66, Q67 V WIPE PULSE DC SHIFTER
Q37, Q38 Q68
(V SLICER)
Q39, Q69 H/V MIX
Q40, Q41 WIPE AMP
TP12
WIPE
8 SD-2
Q34 WP. FADER DC AMP
BORDER/SOFT CONT 501-18
BORDER ON/OFF CONT 501-17
KY-42
WIPE FADER (FRONT PANEL)
M FADER CONT (DC)
Q43, Q70 MIX PULSE GAIN CONT
BLACK
TP18
IC3 (EFF. PULSE SELECTOR)
MIX
WIPE
EXT KEY
SD-2 41 PRE BLKG
Q42 PRE BLKG BUFF
TP19
MIX/WIPE/EXT KEY PULSE
31 EF-9
CN014 (BNC)
EXT KEY
TP14
75
Q46, Q47 EXT KEY AMP
Q48, Q49 EXT KEY CLAMP
TP15
EXT KEY PULSE
EXT KEY LEVEL
Q50, Q51, Q71 EXT KEY LEVEL SET
(SLICER)
Q52, Q72
(EXT KEY SLICER)
Q53, Q73 MIX AMP
TP16
RV15 (CLAMP LEVEL)
TP17
KY-42 501-41 EK.STOP CONT
EK.STOP
DC
Q54, Q74 EXT KEY NAM
EXT KEY LEVEL (FRONT PANEL)
EFFECT CONT
EF.-2⁰CONT 501-43
EF.-2¹CONT 501-42
KY-42

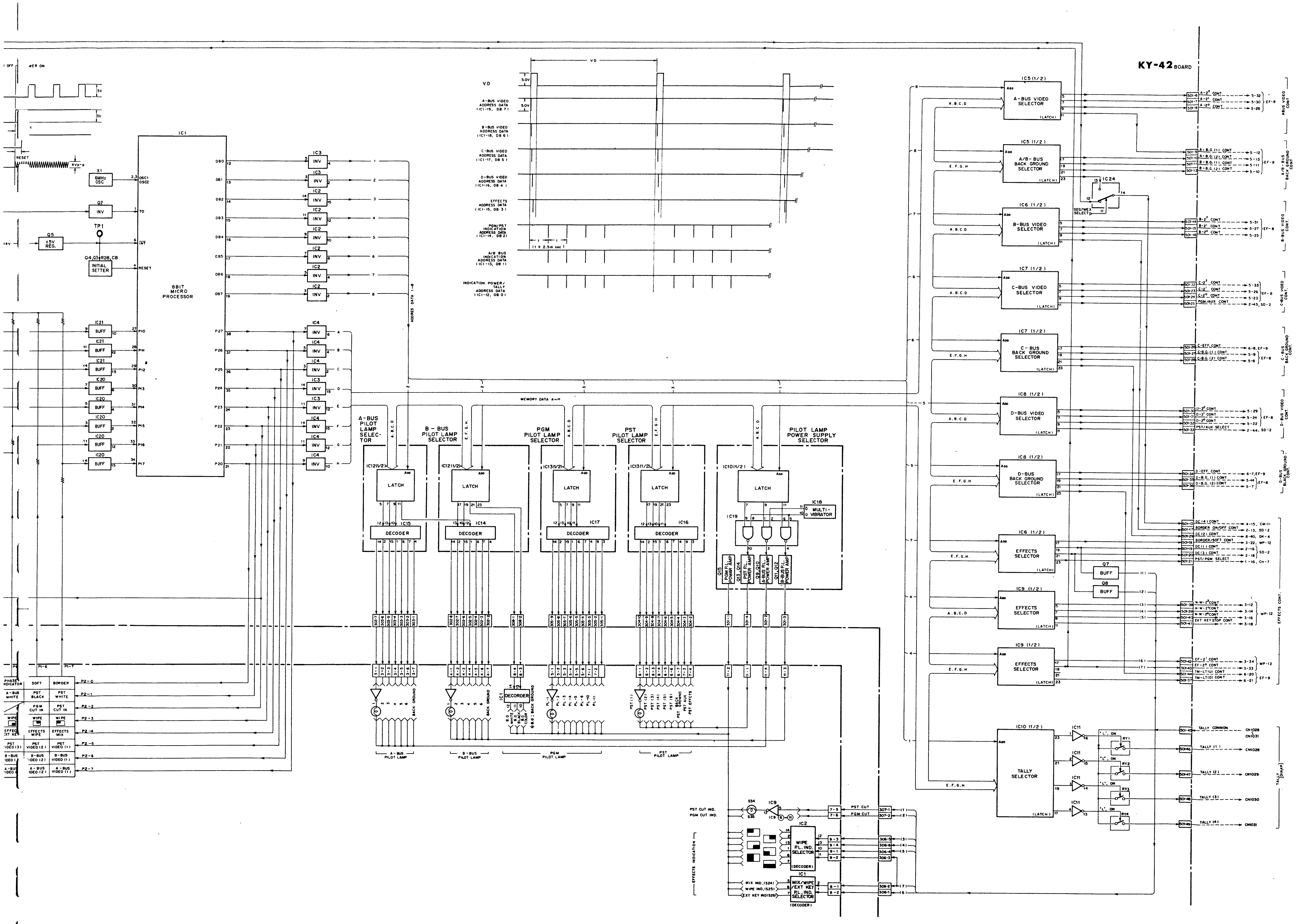
WIPE SYSTEM BLOCK

SEG-2000A (J)
SEG-2000A (U/C)
SEG-2000AP (AEP)
SEG-2000AP (UK)
SEG-2000APM(BRZ)

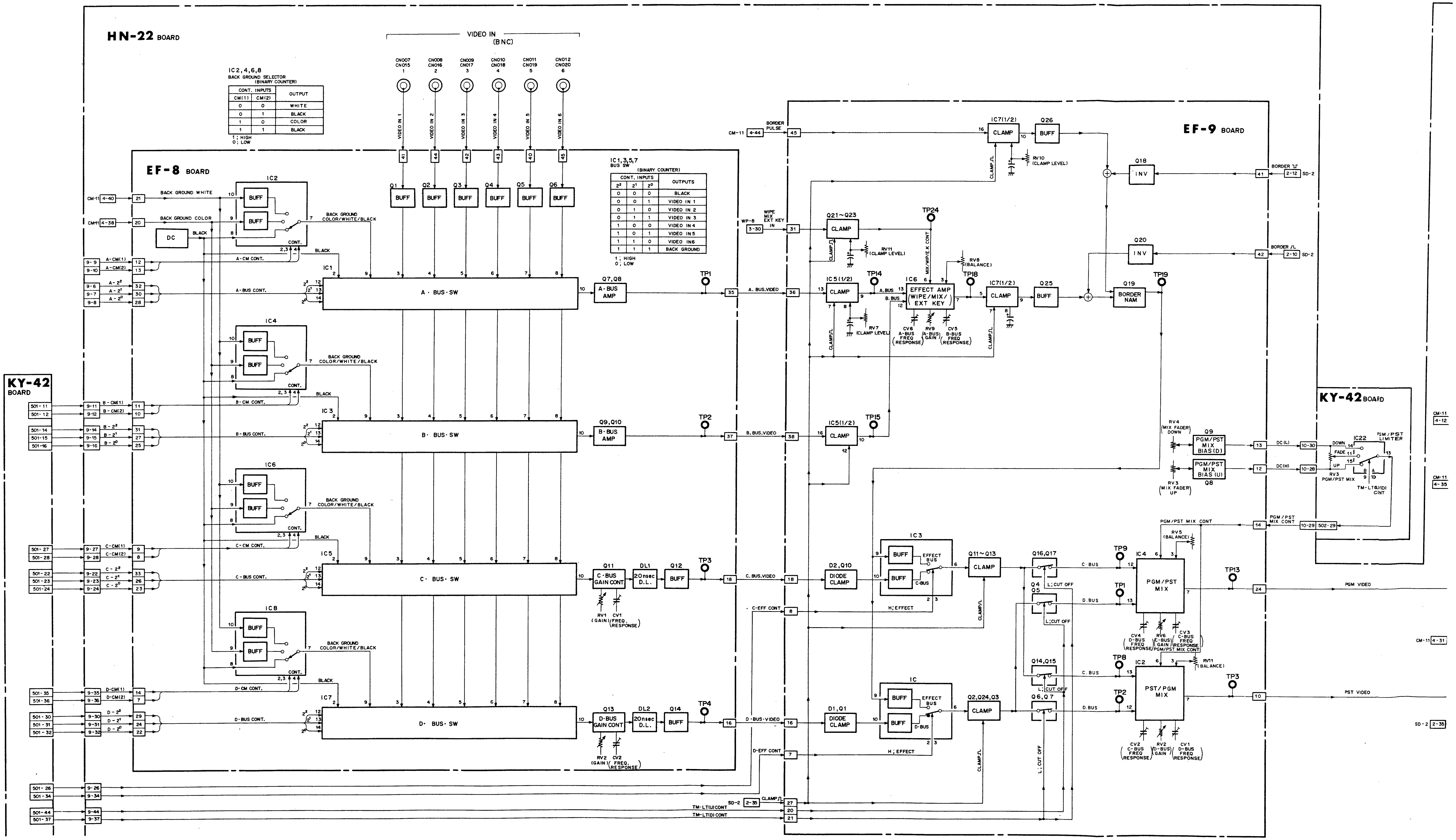
CONTROL SYSTEM BLOCK DIAGRAM


BORDER ON/OFF CONT
2-4
Q22
BUFF
POWER ON
POWER OFF
POWER ON
VD
TO = VD
(IC1-1)
5V
INT
(IC1-6)
50msec
RESET
(IC1-4)
RESET
OSC 2
6MHz
(IC1-3)
4Vp-p
X1
6MHz OSC
OSC1
OSC2
SD-2
2-43
VD
501-4
Q2
INV
TO
TP1
+14V
Q5
+5V REG.
INT
Q4,Q3,R28,C8
INITIAL SETTER
RESET
IC1
8BIT MICRO PROCESSOR
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
WP-11
1-3
SEG/WEX SELECT
13-1
CCF
SEG/WEX SELECT
12-5
Q21
BUFF
IC25
IC25
SEG/WEX SELECT
+5V
IC21
BUFF
IC20
BUFF
P10
P11
P12
P13
P14
P15
P16
P17
P27
P26
P25
P24
P23
P22
P21
P20
IC3
IC2
IC4
INV
ADDRESS DATA 1~8
MEMORY DATA A~H
11-1
11-2
DSK INSERT LIMITER
DSK PGM LIMITER
IC24
IC23
LIMIT(UP)
12-2
Q19
BUFF
LIMIT(DOWN)
12-1
Q20
BUFF
SW2
B BUS LIMIT ON
SW1
A BUS LIMIT ON
11-3
VD
5.0V
A-BUS VIDEO ADDRESS DATA (IC1-19, DB 7)
B-BUS VIDEO ADDRESS DATA (IC1-18, DB 6)
C-BUS VIDEO ADDRESS DATA (IC1-17, DB 5)
D-BUS VIDEO ADDRESS DATA (IC1-16, DB 4)
EFFECTS ADDRESS DATA (IC1-15, DB 3)
PGM/PST INDICATION ADDRESS DATA (IC1-14, DB 2)
(t ≒ 2.5m sec)
A/B BUS INDICATION ADDRESS DATA (IC1-13, DB 1)
INDICATION POWER/ TALLY ADDRESS DATA (IC1-12, DB 0)
A-BUS PILOT LAMP SELECTOR
B-BUS PILOT LAMP SELECTOR
PGM PILOT LAMP SELECTOR
PST PILOT LAMP SELECTOR
PILOT LAMP POWER SUPPLY SELECTOR
IC12(1/2)
IC12(1/2)
IC13(1/2)
IC13(1/2)
IC10(1/2)
LATCH
DECODER
IC15
IC14
IC17
IC16
IC18
MULTI-VIBRATOR
IC19
Q15 PGM P.L. POWER AMP
Q13,Q14 PST P.L. POWER AMP
Q9,Q10 A-BUS P.L. POWER AMP
Q11,Q12 B-BUS P.L. POWER AMP
IC1
DECODER
BACK GROUND
A-BUS PILOT LAMP
B-BUS PILOT LAMP
PGM PILOT LAMP
PST PILOT LAMP
P1-1
P1-2
P1-3
P1-4
P1-5
P1-6
P1-7
PHASE INDICATOR
SOFT
BORDER
P2-0
B-BUS BLACK
B-BUS WHITE
A-BUS BLACK
A-BUS WHITE
PST BLACK
PST WHITE
P2-1
PGM CUT IN
PST CUT IN
P2-2
WIPE
WIPE
WIPE
WIPE
WIPE
WIPE
P2-3
PST BACK GROUN
TAKE
EFFECTS
AUX
EFFECTS EXT KEY
EFFECTS WIPE
EFFECTS MIX
P2-4
PST BACK GROUND
PST VIDEO (6)
PST VIDEO (5)
PST VIDEO (4)
PST VIDEO (3)
PST VIDEO (2)
PST VIDEO (1)
P2-5
B-BUS BACK GROUND
B-BUS VIDEO (6)
B-BUS VIDEO (5)
B-BUS VIDEO (4)
B-BUS VIDEO (3)
B-BUS VIDEO (2)
B-BUS VIDEO (1)
P2-6
A-BUS BACK GROUND
A-BUS VIDEO (6)
A-BUS VIDEO (5)
A-BUS VIDEO (4)
A-BUS VIDEO (3)
A-BUS VIDEO (2)
A-BUS VIDEO (1)
P2-7
KEY BOARD SELECT (SELECT = "ON")
PST CUT IND.
PGM CUT IND.
IC9
IC2
WIPE P.L. IND. SELECTOR (DECODER)
EFFECTS INDICATION
MIX IND.(S24)
WIPE IND.(S25)
EXT KEY IND(S26)
MIX/WIPE EXT KEY P.L. IND. SELECTOR (DECODER)
7-5
7-6
9-3
9-4
9-1
9-2
8-1
8-2
KY-17 BOARD

CONTROL SYSTEM BLOCK
SEG-2000A (J)
SEG-2000A (U/C)
SEG-2000AP (AEP)
SEG-2000AP (UK)
SEG-2000 APM (BRZ)


KY-42 BOARD
IC1
8BIT MICRO PROCESSOR
X1 6MHz OSC
Q2 INV
TP1
Q5 +5V REG.
Q4,Q3,R28,C8 INITIAL SETTER
RESET
IC3 INV
IC2 INV
IC4 INV
IC21 BUFF
IC20 BUFF
ADDRES DATA 1~8
VD
A-BUS VIDEO ADDRESS DATA (IC1-19, DB 7)
B-BUS VIDEO ADDRESS DATA (IC1-18, DB 6)
C-BUS VIDEO ADDRESS DATA (IC1-17, DB 5)
D-BUS VIDEO ADDRESS DATA (IC1-16, DB 4)
EFFECTS ADDRESS DATA (IC1-15, DB 3)
PGM/PST INDICATION ADDRESS DATA (IC1-14, DB 2)
A/B BUS INDICATION ADDRESS DATA (IC1-13, DB 1)
INDICATION POWER/TALLY ADDRESS DATA (IC1-12, DB 0)
(1 ÷ 2.5m sec)
MEMORY DATA A~H
A-BUS PILOT LAMP SELECTOR
B-BUS PILOT LAMP SELECTOR
PGM PILOT LAMP SELECTOR
PST PILOT LAMP SELECTOR
PILOT LAMP POWER SUPPLY SELECTOR
LATCH
DECODER
IC12(1/2) IC15
IC12(1/2) IC14
IC13(1/2) IC17
IC13(1/2) IC16
IC10(1/2)
IC18 MULTI-VIBRATOR
IC19
Q15 PGM PL POWER AMP
Q13,Q14 PST PL POWER AMP
Q9,Q10 A-BUS PL POWER AMP
Q11,Q12 B-BUS PL POWER AMP
BACK GROUND
A-BUS PILOT LAMP
B-BUS PILOT LAMP
PGM PILOT LAMP
PST PILOT LAMP
PHASE INDICATOR
SOFT
BORDER
A-BUS WHITE
PST BLACK
PST WHITE
PGM CUT IN
PST CUT IN
WIPE
EFFECTS WIPE
EFFECTS MIX
PST VIDEO (2)
PST VIDEO (1)
B-BUS VIDEO (2)
B-BUS VIDEO (1)
A-BUS VIDEO (2)
A-BUS VIDEO (1)
P2-0 P2-1 P2-2 P2-3 P2-4 P2-5 P2-6 P2-7
IC5 (1/2) A-BUS VIDEO SELECTOR (LATCH)
IC5 (1/2) A/B-BUS BACK GROUND SELECTOR (LATCH)
IC6 (1/2) B-BUS VIDEO SELECTOR (LATCH)
IC7 (1/2) C-BUS VIDEO SELECTOR (LATCH)
IC7 (1/2) C-BUS BACK GROUND SELECTOR (LATCH)
IC8 (1/2) D-BUS VIDEO SELECTOR (LATCH)
IC8 (1/2) D-BUS BACK GROUND SELECTOR (LATCH)
IC6 (1/2) EFFECTS SELECTOR (LATCH)
IC9 (1/2) EFFECTS SELECTOR (LATCH)
IC9 (1/2) EFFECTS SELECTOR (LATCH)
IC10 (1/2) TALLY SELECTOR (LATCH)
IC24
SEG/WEX SELECT
Q7 BUFF
Q8 BUFF
IC11
RY1 RY2 RY3 RY4
A,B,C,D
E,F,G,H
A-BUS VIDEO CONT
A/B-BUS BACK GROUND CONT
B-BUS VIDEO CONT
C-BUS VIDEO CONT
C-BUS BACK GROUND CONT
D-BUS VIDEO CONT
D-BUS BACK GROUND CONT
EFFECTS CONT
TALLY (RELAY)
TALLY COMMON
TALLY (1)
TALLY (2)
TALLY (3)
TALLY (4)
CN1028 CN1031 CN1029 CN1030
PST/AUX SELECT
PGM/AUX CONT
BORDER ON/OFF CONT
BORDER/SOFT CONT
PST/PGM SELECT
EXT KEY/STOP CONT
PST CUT IND.
PGM CUT IND.
S34 S35
IC9
PST CUT
PGM CUT
EFFECTS INDICATION
IC2 WIPE PL. IND. SELECTOR (DECODER)
IC1 MIX/WIPE/EXT KEY PL. IND. SELECTOR (DECODER)
MIX IND.(S24)
WIPE IND.(S25)
EXT KEY IND(S26)

SPECIAL EFFECT VIDEO SIGNAL SYSTEM BLOCK DIAGRAM


HN-22 BOARD
EF-8 BOARD
EF-9 BOARD
KY-42 BOARD
VIDEO IN (BNC)
CN007 CN015 1
CN008 CN016 2
CN009 CN017 3
CN010 CN018 4
CN011 CN019 5
CN012 CN020 6
Q1 Q2 Q3 Q4 Q5 Q6 BUFF
IC2 IC4 IC6 IC8 BUFF CONT.
BACK GROUND WHITE
BACK GROUND COLOR
BACK GROUND COLOR/WHITE/BLACK
DC
BLACK
A-CM CONT.
A-BUS CONT.
B-CM CONT.
B-BUS CONT.
C-CM CONT.
C-BUS CONT.
D-CM CONT.
D-BUS CONT.
IC1 A · BUS · SW
IC3 B · BUS · SW
IC5 C · BUS · SW
IC7 D · BUS · SW
Q7,Q8 A · BUS AMP
Q9,Q10 B · BUS AMP
Q11 C · BUS GAIN CONT
Q13 D · BUS GAIN CONT
DL1 20nsec D.L.
DL2 20nsec D.L.
Q12 BUFF
Q14 BUFF
RV1 (GAIN) CV1 (FREQ. RESPONSE)
RV2 (GAIN) CV2 (FREQ. RESPONSE)
TP1 TP2 TP3 TP4
A. BUS.VIDEO
B. BUS.VIDEO
C. BUS.VIDEO
D-BUS-VIDEO
C-EFF CONT.
D-EFF CONT.
CLAMP
TM-LT(U)CONT
TM-LT(D)CONT
SD-2
CM-11
BORDER PULSE
IC7(1/2) CLAMP
Q26 BUFF
RV10 (CLAMP LEVEL)
Q18 INV
Q20 INV
BORDER
WP-8
WIPE MIX EXT KEY IN
Q21~Q23 CLAMP
RV11 (CLAMP LEVEL)
TP24
MIX/WIPE/EX.K CONT
IC5(1/2) CLAMP
TP14
RV7 (CLAMP LEVEL)
IC6 EFFECT AMP (WIPE/MIX/EXT KEY)
RV8 (BALANCE)
TP18
CV6 A-BUS FREQ RESPONSE
RV9 (A-BUS) GAIN
CV5 B-BUS FREQ RESPONSE
IC7(1/2) CLAMP
Q25 BUFF
Q19 BORDER NAM
TP19
TP15
RV4 (MIX FADER) DOWN
RV3 (MIX FADER) UP
Q9 PGM/PST MIX BIAS (D)
Q8 PGM/PST MIX BIAS (U)
DC(L)
DC(H)
IC22 PGM/PST LIMITER
DOWN FADE UP
RV3 PGM/PST MIX
TM-LT(U)(D) CONT
PGM/PST MIX CONT
RV5 (BALANCE)
IC3 BUFF EFFECT BUS C-BUS
IC BUFF EFFECT BUS D-BUS
D2,Q10 DIODE CLAMP
D1,Q1 DIODE CLAMP
H; EFFECT
Q11~Q13 CLAMP
Q2,Q24,Q3 CLAMP
Q16,Q17
Q4 Q5
Q14,Q15
Q6,Q7
L; CUT OFF
C. BUS
D. BUS
TP9 TP1 TP8 TP2 TP13 TP3
IC4 PGM/PST MIX
IC2 PST/PGM MIX
CV4 D-BUS FREQ RESPONSE
RV6 (C-BUS) GAIN PGM/PST MIX CONT
CV3 C-BUS FREQ RESPONSE
RV11 (BALANCE)
CV2 C-BUS FREQ RESPONSE
RV2 (D-BUS) GAIN
CV1 D-BUS FREQ RESPONSE
PGM VIDEO
PST VIDEO

IC2,4,6,8
BACK GROUND SELECTOR
(BINARY COUNTER)

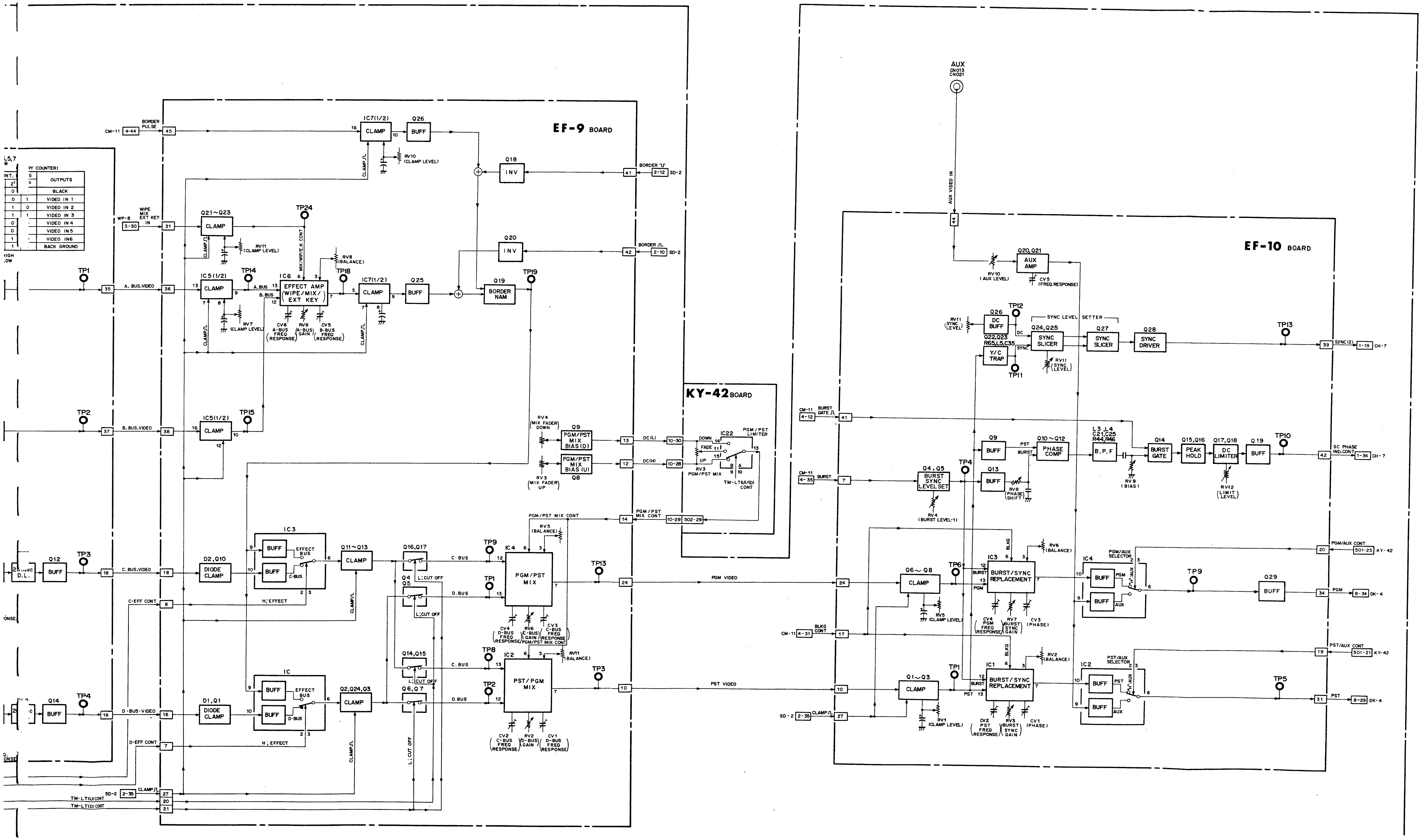
CONT. INPUTS		OUTPUT
CM(1)	CM(2)	
0	0	WHITE
0	1	BLACK
1	0	COLOR
1	1	BLACK

1 ; HIGH
0 ; LOW

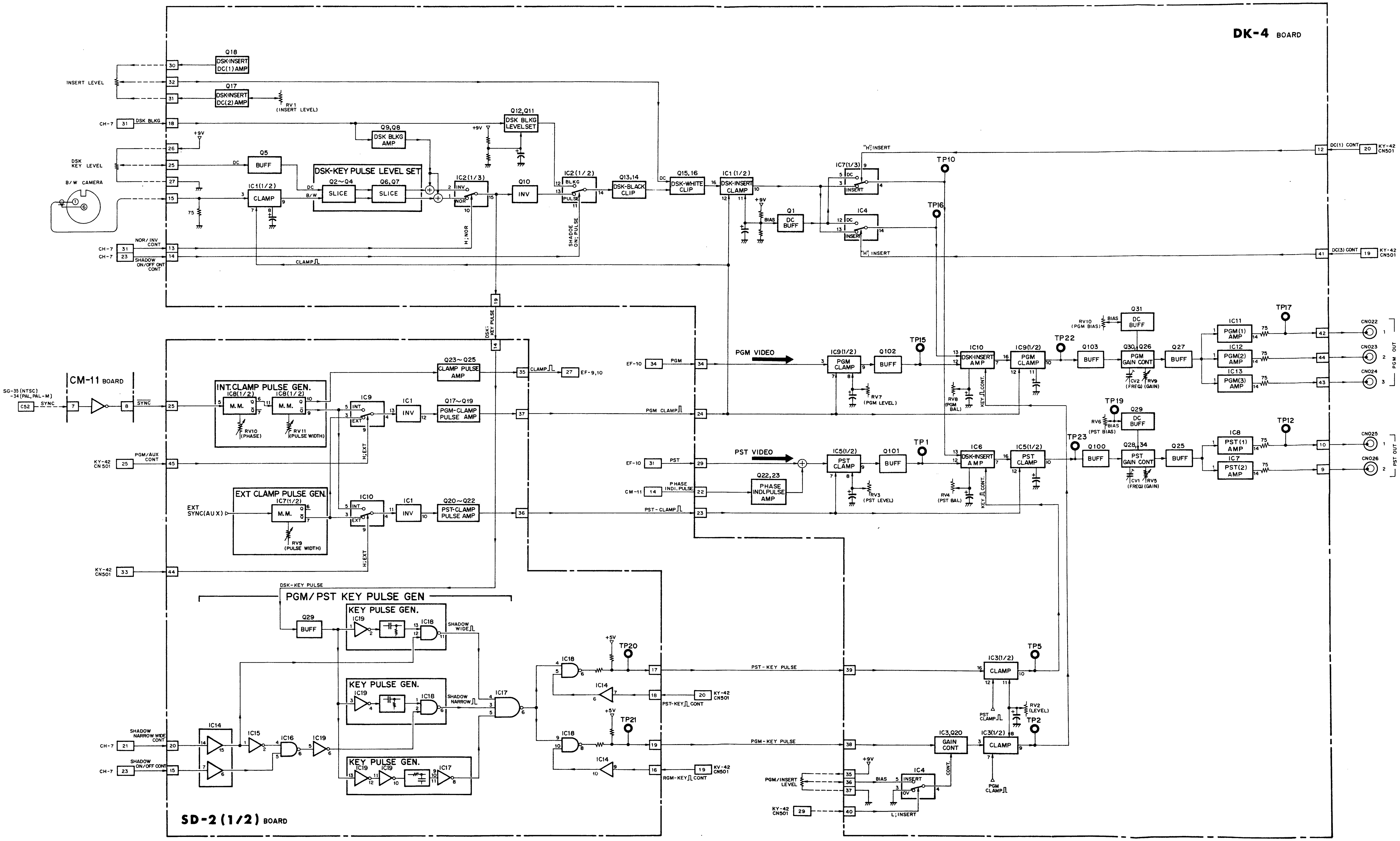
IC1,3,5,7
BUS SW
(BINARY COUNTER)

CONT. INPUTS			OUTPUTS
2^2	2^1	2^0	
0	0	0	BLACK
0	0	1	VIDEO IN 1
0	1	0	VIDEO IN 2
0	1	1	VIDEO IN 3
1	0	0	VIDEO IN 4
1	0	1	VIDEO IN 5
1	1	0	VIDEO IN6
1	1	1	BACK GROUND

1 ; HIGH
0 ; LOW


EF-9 BOARD
KY-42 BOARD
EF-10 BOARD
BORDER PULSE
CM-11 4-44
45
IC7(1/2)
CLAMP
Q26
BUFF
RV10 (CLAMP LEVEL)
Q18
INV
BORDER
41
2-12 SD-2
WIPE MIX EXT KEY IN
WP-8 3-30
31
Q21~Q23
CLAMP
TP24
RV11 (CLAMP LEVEL)
MIX/WIPE/EX CONT
RV8 (BALANCE)
Q20
INV
42
2-10 SD-2
TP1
35
A. BUS.VIDEO
36
IC5(1/2)
CLAMP
TP14
A.BUS
B.BUS
IC6
EFFECT AMP (WIPE/MIX/ EXT KEY)
TP18
IC7(1/2)
CLAMP
Q25
BUFF
Q19
BORDER NAM
TP19
RV7 (CLAMP LEVEL)
CV6 A-BUS FREQ (RESPONSE)
RV9 (A-BUS GAIN)
CV5 B-BUS FREQ (RESPONSE)
TP2
37
B. BUS.VIDEO
38
IC5(1/2)
CLAMP
TP15
RV4 (MIX FADER DOWN)
Q9
PGM/PST MIX BIAS(D)
PGM/PST MIX BIAS (U)
Q8
RV3 (MIX FADER UP)
13
DC(L)
10-30
12
DC(H)
10-28
DOWN
FADE
UP
IC22
PGM/PST LIMITER
RV3 PGM/PST MIX
TM-LT(U)/(D) CONT
PGM/PST MIX CONT
14
10-29
502-29
IC3
BUFF
EFFECT BUS
C-BUS
TP3
Q12
BUFF
18
C. BUS.VIDEO
D2,Q10
DIODE CLAMP
Q11~Q13
CLAMP
Q16,Q17
C. BUS
L; CUT OFF
Q4 Q5
D. BUS
TP9
IC4
PGM/PST MIX
RV5 (BALANCE)
TP1
TP13
24
PGM VIDEO
C-EFF CONT
8
H; EFFECT
CLAMP
CV4 D-BUS FREQ RESPONSE
RV6 (C-BUS GAIN)
CV3 C-BUS FREQ RESPONSE
PGM/PST MIX CONT
RV11 (BALANCE)
Q14,Q15
C. BUS
L; CUT OFF
IC
BUFF
EFFECT BUS
D-BUS
TP8
IC2
PST/PGM MIX
TP3
10
PST VIDEO
Q14
BUFF
TP4
16
D-BUS-VIDEO
D1,Q1
DIODE CLAMP
Q2,Q24,Q3
CLAMP
Q6,Q7
D. BUS
TP2
CV2 C-BUS FREQ (RESPONSE)
RV2 (D-BUS GAIN)
CV1 D-BUS FREQ (RESPONSE)
D-EFF CONT
7
H; EFFECT
L; CUT OFF
SD-2 2-35
CLAMP
27
TM-LT(U) CONT
20
TM-LT(D) CONT
21
RY COUNTER)
INT.
OUTPUTS
BLACK
VIDEO IN 1
VIDEO IN 2
VIDEO IN 3
VIDEO IN 4
VIDEO IN5
VIDEO IN6
BACK GROUND
D.L.
AUX
CN013 CN021
AUX VIDEO IN
44
Q20,Q21
AUX AMP
RV10 (AUX LEVEL)
CV5 (FREQ. RESPONSE)
Q26
DC BUFF
TP12
RV11 (SYNC LEVEL)
SYNC LEVEL SETTER
Q24,Q25
SYNC SLICER
Q27
SYNC SLICER
Q28
SYNC DRIVER
TP13
39
SYNC(2)
1-19 CH-7
Q22,Q23 R65,L5,C35
Y/C TRAP
TP11
RV11 (SYNC LEVEL)
CM-11 4-12
BURST GATE
41
Q9
BUFF
PST
BURST
Q10~Q12
PHASE COMP
L3,L4 C21,C25 R44,R46
B.P.F
RV9 (BIAS)
Q14
BURST GATE
Q15,Q16
PEAK HOLD
Q17,Q18
DC LIMITER
RV12 (LIMIT LEVEL)
Q19
BUFF
TP10
42
SC PHASE IND.CONT
1-34 CH-7
CM-11 4-35
BURST
7
Q4,Q5
BURST SYNC LEVEL SET
RV4 (BURST LEVEL-1)
TP4
Q13
BUFF
RV8 (PHASE SHIFT)
BLKG
RV6 (BALANCE)
PGM/AUX CONT
20
501-25 KY-42
Q6~Q8
CLAMP
TP6
IC3
BURST/SYNC REPLACEMENT
IC4
PGM/AUX SELECTOR
BUFF
PGM
AUX
TP9
Q29
BUFF
34
PGM
8-34 DK-4
RV5 (CLAMP LEVEL)
CV4 PGM FREQ (RESPONSE)
RV7 (BURST SYNC GAIN)
CV3 (PHASE)
CM-11 4-31
BLKG CONT
17
RV2 (BALANCE)
PST/AUX CONT
19
501-21 KY-42
Q1~Q3
CLAMP
TP1
IC1
BURST/SYNC REPLACEMENT
IC2
PST/AUX SELECTOR
TP5
31
PST
8-29 DK-4
SD-2 2-35
CLAMP
27
RV1 (CLAMP LEVEL)
CV2 PST FREQ (RESPONSE)
RV3 (BURST SYNC GAIN)
CV1 (PHASE)

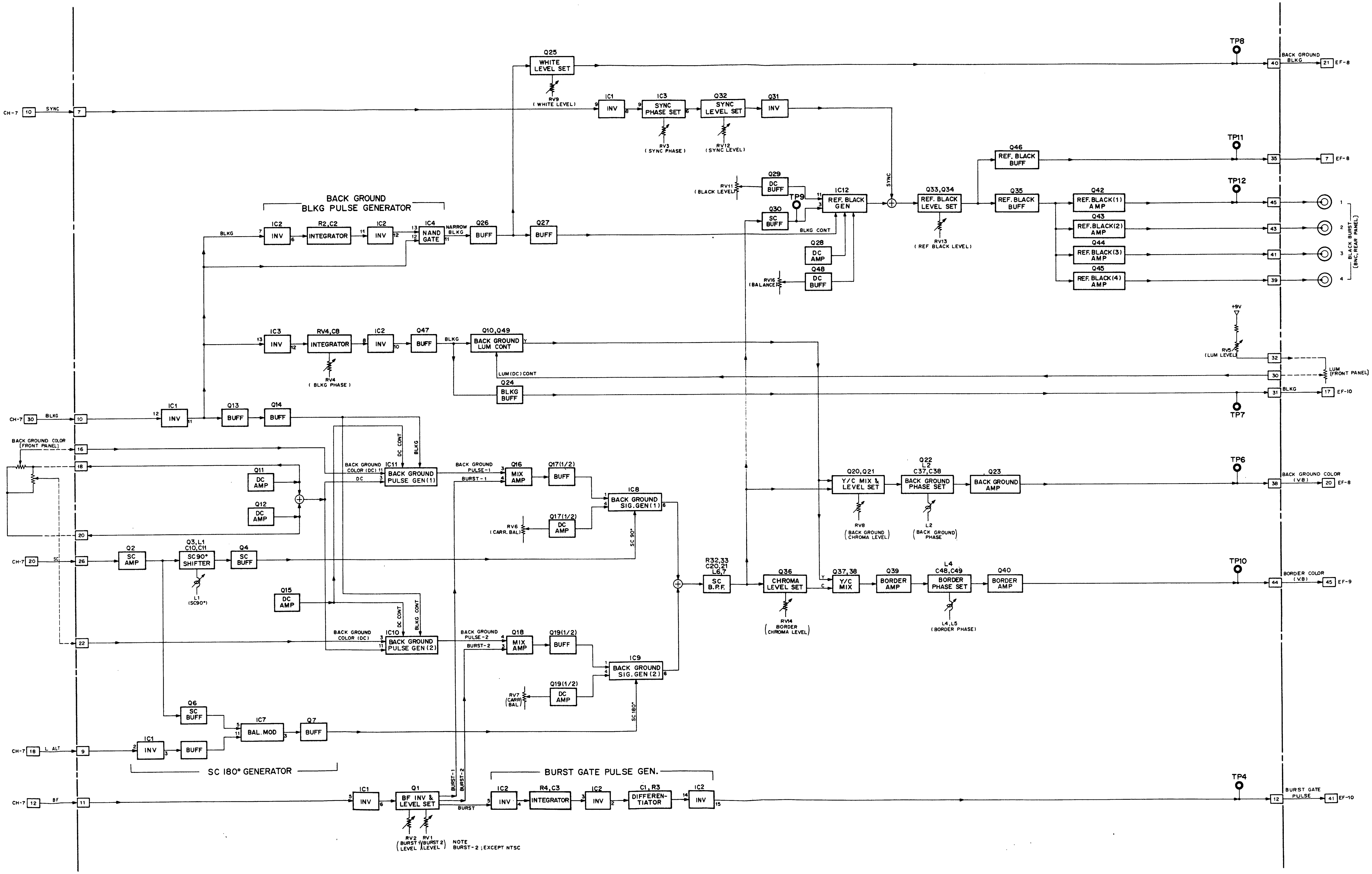
DOWNSTREAM KEYER SYSTEM BLOCK DIAGRAM


DK-4 BOARD
CM-11 BOARD
SD-2 (1/2) BOARD
INSERT LEVEL
DSK KEY LEVEL
B/W CAMERA
Q18 DSK-INSERT DC(1) AMP
Q17 DSK-INSERT DC(2) AMP
RV1 (INSERT LEVEL)
Q9,Q8 DSK BLKG AMP
Q12,Q11 DSK BLKG LEVEL SET
Q5 BUFF
DSK-KEY PULSE LEVEL SET
Q2~Q4 SLICE
Q6,Q7 SLICE
IC1(1/2) CLAMP
IC2(1/3) INV NOR
Q10 INV
IC2(1/2) BLKG PULSE
SHADOE ON/I PULSE
Q13,14 DSK-BLACK CLIP
Q15,16 DSK-WHITE CLIP
IC1(1/2) DSK-INSERT CLAMP
Q1 DC BUFF
IC7(1/3) DC INSERT
IC4 DC INSERT
"H"; INSERT
TP10
TP16
NOR/INV CONT
SHADOW ON/OFF CONT
CLAMP
DSK KEY PULSE
SG-35 (NTSC) -34 (PAL, PAL-M)
SYNC
INT. CLAMP PULSE GEN.
IC8(1/2) M.M.
RV10 (PHASE)
RV11 (PULSE WIDTH)
IC9 INT EXT
IC1 INV
Q17~Q19 PGM-CLAMP PULSE AMP
Q23~Q25 CLAMP PULSE AMP
EF-9,10
PGM/AUX CONT
EXT CLAMP PULSE GEN.
IC7(1/2) M.M.
RV9 (PULSE WIDTH)
EXT SYNC(AUX)
IC10 INT EXT
Q20~Q22 PST-CLAMP PULSE AMP
H; EXT
KY-42 CN501
PGM/PST KEY PULSE GEN
Q29 BUFF
KEY PULSE GEN.
IC19
IC18
SHADOW WIDE
SHADOW NARROW
IC17
IC14
IC15
IC16
SHADOW NARROW WIDE CONT
SHADOW ON/OFF CONT
CH-7
TP20
TP21
+5V
PST-KEY CONT
RGM-KEY CONT
EF-10
PGM
PST
PGM CLAMP
PHASE INDI. PULSE
PST-CLAMP
PGM VIDEO
PST VIDEO
IC9(1/2) PGM CLAMP
Q102 BUFF
RV7 (PGM LEVEL)
TP15
IC10 DSK-INSERT AMP
IC9(1/2) PGM CLAMP
RV8 (PGM BAL)
KEY CONT.
TP22
Q103 BUFF
Q31 DC BUFF
RV10 (PGM BIAS)
Q30,Q26 PGM GAIN CONT
CV2 (FREQ) RV9 (GAIN)
Q27 BUFF
IC11 PGM(1) AMP
IC12 PGM(2) AMP
IC13 PGM(3) AMP
TP17
CN022
CN023
CN024
PGM OUT
Q22,23 PHASE INDI.PULSE AMP
IC5(1/2) PST CLAMP
Q101 BUFF
RV3 (PST LEVEL)
TP1
IC6 DSK-INSERT AMP
IC5(1/2) PST CLAMP
RV4 (PST BAL)
TP23
TP19
Q100 BUFF
Q29 DC BUFF
RV6 (PST BIAS)
Q28,34 PST GAIN CONT
CV1 (FREQ) RV5 (GAIN)
Q25 BUFF
IC8 PST(1) AMP
IC7 PST(2) AMP
TP12
CN025
CN026
PST OUT
DC(1) CONT
DC(3) CONT
PST-KEY PULSE
PGM-KEY PULSE
IC3(1/2) CLAMP
TP5
RV2 (LEVEL)
TP2
PST CLAMP
IC3,Q20 GAIN CONT
PGM CLAMP
PGM/INSERT LEVEL
BIAS
IC4 INSERT 0V
L; INSERT

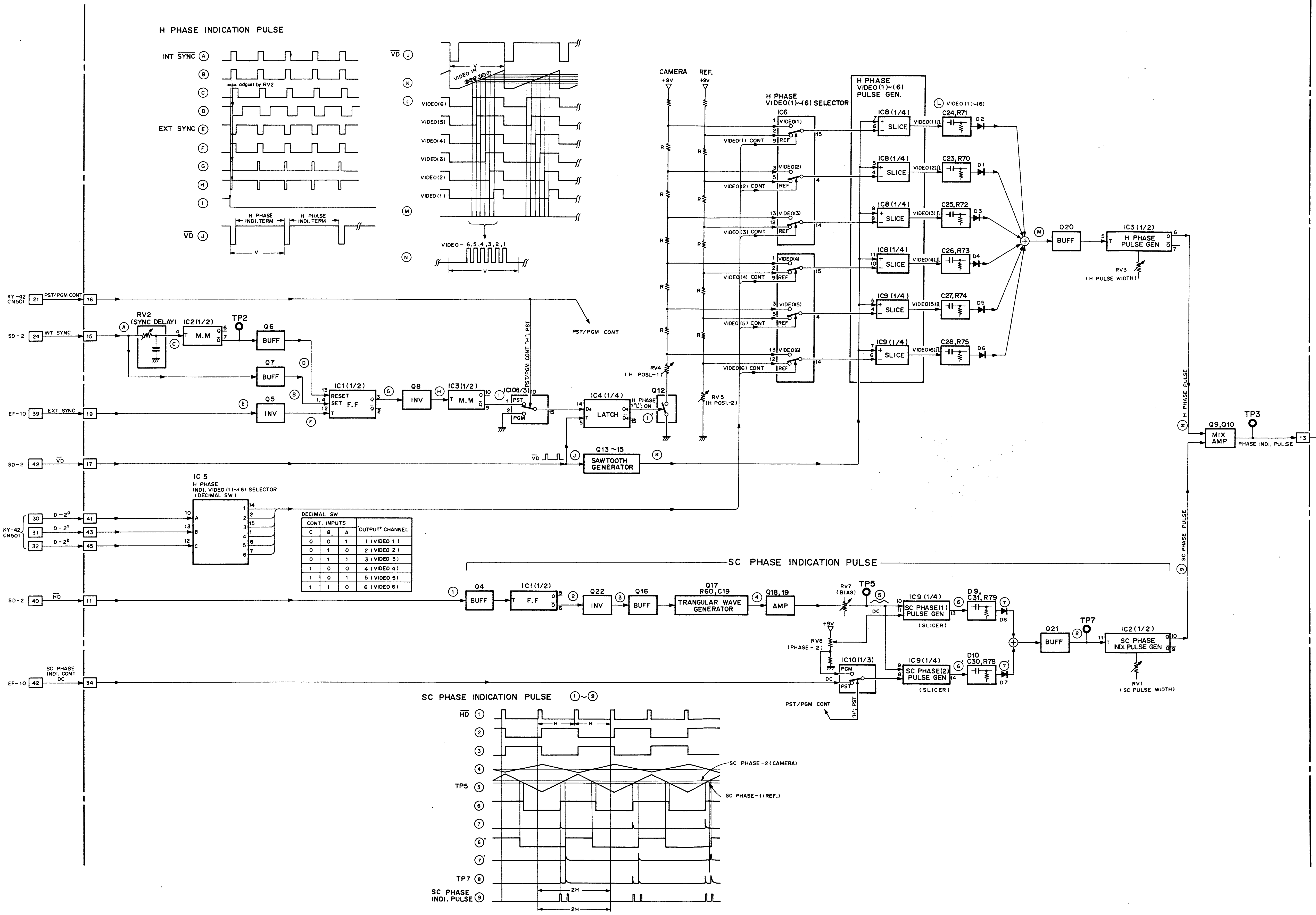
DOWNSTREAM KEYER SYSTEM BLOCK

SEG-2000A (J)
SEG-2000A (U/C)
SEG-2000 AP (AEP)
SEG-2000 AP (UK)
SEG-2000 APM (BRZ)

BACK GROUND COLOR SYSTEM BLOCK DIAGRAM


CH-7 10 SYNC 7
Q25 WHITE LEVEL SET
RV9 (WHITE LEVEL)
IC1 INV
IC3 SYNC PHASE SET
RV3 (SYNC PHASE)
Q32 SYNC LEVEL SET
RV12 (SYNC LEVEL)
Q31 INV
TP8
40 BACK GROUND BLKG 21 EF-8
TP11
Q46 REF. BLACK BUFF
35 7 EF-8
BACK GROUND BLKG PULSE GENERATOR
IC2 INV
R2,C2 INTEGRATOR
IC2 INV
IC4 NAND GATE
NARROW BLKG
Q26 BUFF
Q27 BUFF
BLKG
BLKG CONT
Q29 DC BUFF
RV11 (BLACK LEVEL)
Q30 SC BUFF
TP9
IC12 REF. BLACK GEN
SYNC
Q33,Q34 REF. BLACK LEVEL SET
RV13 (REF BLACK LEVEL)
Q35 REF. BLACK BUFF
TP12
Q42 REF.BLACK(1) AMP
Q43 REF.BLACK(2) AMP
Q44 REF.BLACK(3) AMP
Q45 REF.BLACK(4) AMP
45 43 41 39
1 2 3 4
BLACK BURST (BNC, REAR PANEL)
Q28 DC AMP
Q48 DC BUFF
RV16 (BALANCE)
IC3 INV
RV4,C8 INTEGRATOR
RV4 (BLKG PHASE)
IC2 INV
Q47 BUFF
BLKG
Q10,Q49 BACK GROUND LUM CONT
Y
LUM (DC) CONT
Q24 BLKG BUFF
+9V
RV5 (LUM LEVEL)
32 30
LUM (FRONT PANEL)
31 BLKG 17 EF-10
TP7
CH-7 30 BLKG 10
IC1 INV
Q13 BUFF
Q14 BUFF
BACK GROUND COLOR (FRONT PANEL)
16 18 20
Q11 DC AMP
Q12 DC AMP
DC CONT
BLKG
BACK GROUND COLOR (DC)
DC
IC11 BACK GROUND PULSE GEN(1)
BACK GROUND PULSE-1
BURST-1
Q16 MIX AMP
Q17(1/2) BUFF
Q17(1/2) DC AMP
RV6 (CARR. BAL)
IC8 BACK GROUND SIG.GEN(1)
SC 90°
TP6
Q20,Q21 Y/C MIX & LEVEL SET
RV8 (BACK GROUND CHROMA LEVEL)
Q22 L2 C37,C38 BACK GROUND PHASE SET
L2 (BACK GROUND PHASE)
Q23 BACK GROUND AMP
38 BACK GROUND COLOR (VB) 20 EF-8
CH-7 20 SC 26
Q2 SC AMP
Q3,L1 C10,C11 SC90° SHIFTER
L1 (SC90°)
Q4 SC BUFF
Q15 DC AMP
R32,33 C20,21 L6,7 SC B.P.F.
Q36 CHROMA LEVEL SET
RV14 BORDER (CHROMA LEVEL)
Y C
Q37,38 Y/C MIX
Q39 BORDER AMP
L4 C48,C49 BORDER PHASE SET
L4,L5 (BORDER PHASE)
Q40 BORDER AMP
TP10
44 BORDER COLOR (VB) 45 EF-9
22
BACK GROUND COLOR (DC)
DC CONT
BLKG CONT
IC10 BACK GROUND PULSE GEN(2)
BACK GROUND PULSE-2
BURST-2
Q18 MIX AMP
Q19(1/2) BUFF
Q19(1/2) DC AMP
RV7 (CARR. BAL)
IC9 BACK GROUND SIG.GEN(2)
SC 180°
Q6 SC BUFF
IC7 BAL.MOD
Q7 BUFF
CH-7 18 L ALT 9
IC1 INV
BUFF
SC 180° GENERATOR
CH-7 12 BF 11
IC1 INV
Q1 BF INV & LEVEL SET
BURST-1
BURST-2
BURST
RV2 (BURST 1 LEVEL)
RV1 (BURST 2 LEVEL)
NOTE BURST-2 ; EXCEPT NTSC
BURST GATE PULSE GEN.
IC2 INV
R4,C3 INTEGRATOR
IC2 INV
C1,R3 DIFFEREN-TIATOR
IC2 INV
TP4
12 BURST GATE PULSE 41 EF-10

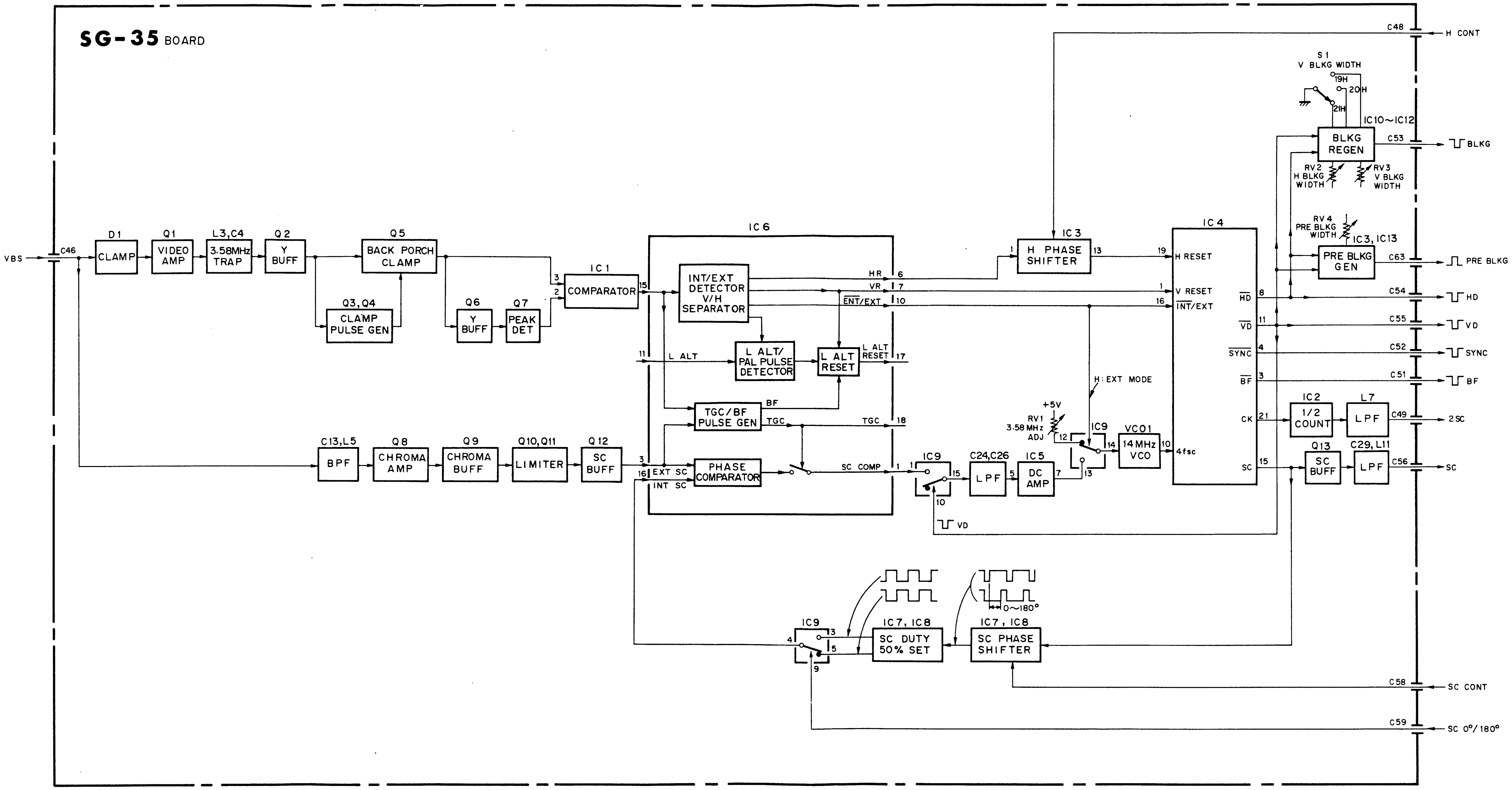
PHASE INDICATION SYSTEM BLOCK DIAGRAM


H PHASE INDICATION PULSE
INT SYNC Ⓐ
Ⓑ
Ⓒ
adjust by RV2
Ⓓ
EXT SYNC Ⓔ
Ⓕ
Ⓖ
Ⓗ
Ⓘ
H PHASE INDI. TERM
VD Ⓙ
V
VD Ⓙ
Ⓚ
Ⓛ
VIDEO IN ⑥⑤④③②①
VIDEO(6)
VIDEO(5)
VIDEO(4)
VIDEO(3)
VIDEO(2)
VIDEO(1)
Ⓜ
Ⓝ
VIDEO- 6,5,4,3,2,1
CAMERA +9V
REF. +9V
H PHASE VIDEO(1)~(6) SELECTOR
IC6
VIDEO(1) CONT
VIDEO(2) CONT
VIDEO(3) CONT
VIDEO(4) CONT
VIDEO(5) CONT
VIDEO(6) CONT
REF
H PHASE VIDEO(1)~(6) PULSE GEN.
IC8(1/4)
IC9(1/4)
SLICE
Ⓛ VIDEO(1)~(6)
C24,R71
C23,R70
C25,R72
C26,R73
C27,R74
C28,R75
D1
D2
D3
D4
D5
D6
Q20
BUFF
IC3(1/2)
H PHASE PULSE GEN
RV3 (H PULSE WIDTH)
KY-42 CN501
PST/PGM CONT
SD-2
INT SYNC
EF-10
EXT SYNC
RV2 (SYNC DELAY)
IC2(1/2)
M.M
TP2
Q6
Q7
Q5
INV
IC1(1/2)
RESET
SET
F.F
Q8
IC3(1/2)
IC10(1/3)
PST
PGM
PST/PGM CONT 'H': PST
PST/PGM CONT
IC4(1/4)
LATCH
H PHASE 'L': ON
Q12
RV4 (H POSI.-1)
RV5 (H POSI.-2)
Q13~15
SAWTOOTH GENERATOR
IC 5
H PHASE INDI. VIDEO(1)~(6) SELECTOR (DECIMAL SW)
D-2⁰
D-2¹
D-2²
H PHASE PULSE
SC PHASE PULSE
Q9,Q10
MIX AMP
TP3
PHASE INDI. PULSE
CM-11
SC PHASE INDICATION PULSE
HD
Q4
IC1(1/2)
Q22
Q16
Q17
R60, C19
TRANGULAR WAVE GENERATOR
Q18,19
AMP
RV7 (BIAS)
TP5
DC
IC9(1/4)
SC PHASE(1) PULSE GEN
SC PHASE(2) PULSE GEN
(SLICER)
D9, C31, R79
D10, C30, R78
D7
D8
Q21
TP7
IC2(1/2)
SC PHASE INDI. PULSE GEN
RV1 (SC PULSE WIDTH)
RV8 (PHASE-2)
IC10(1/3)
PST/PGM CONT
'H': PST
SC PHASE INDI. CONT DC
SC PHASE INDICATION PULSE ①~⑨
HD ①
H
TP5 ⑤
SC PHASE-2 (CAMERA)
SC PHASE-1 (REF.)
TP7 ⑧
SC PHASE INDI. PULSE ⑨
2H

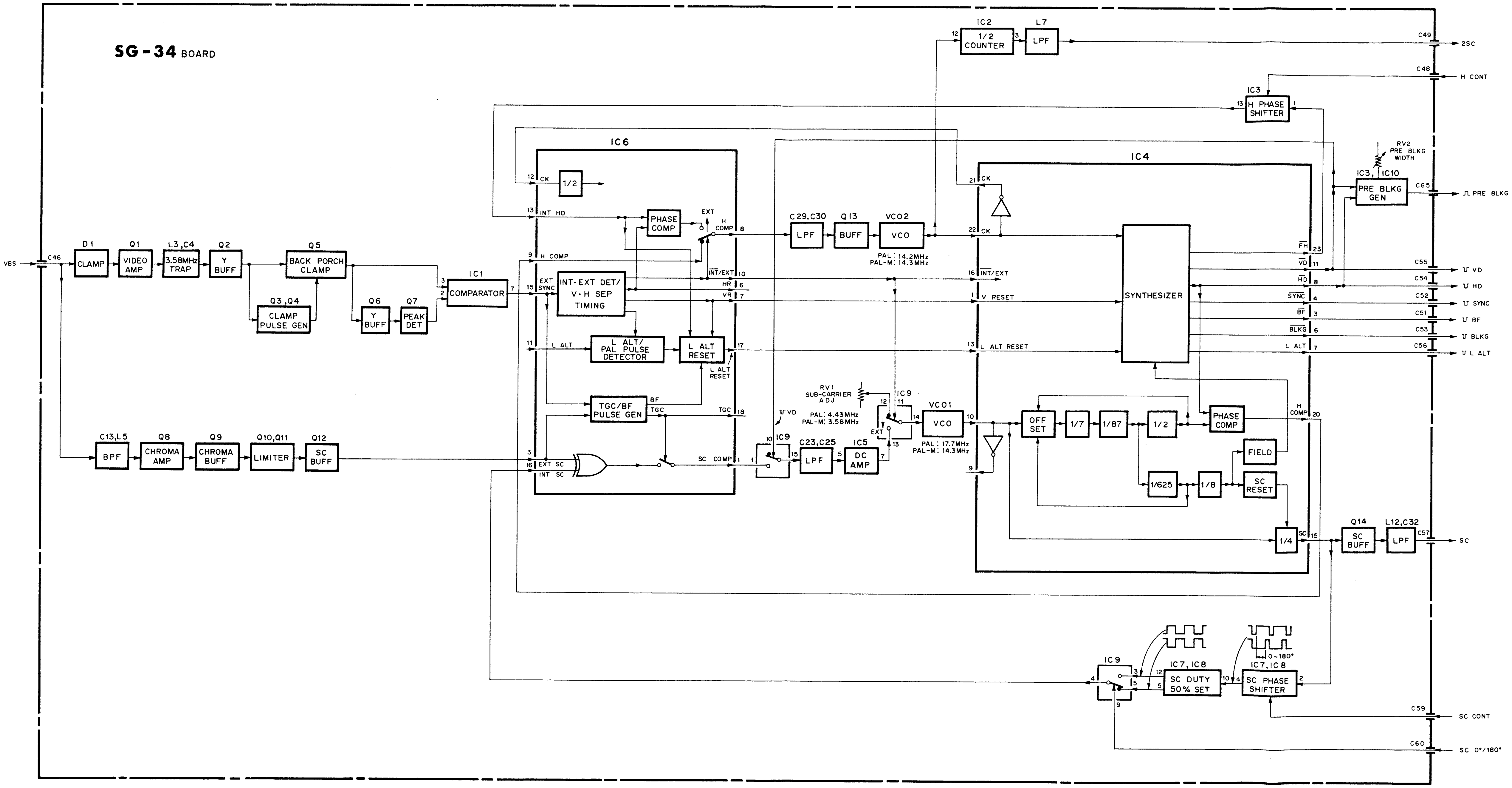
DECIMAL SW

CONT. INPUTS			"OUTPUT" CHANNEL
C	B	A	
0	0	1	1 (VIDEO 1)
0	1	0	2 (VIDEO 2)
0	1	1	3 (VIDEO 3)
1	0	0	4 (VIDEO 4)
1	0	1	5 (VIDEO 5)
1	1	0	6 (VIDEO 6)

SG-35 BOARD SYNC GENERATOR SYSTEM BLOCK DIAGRAM
[For SEG-2000A use]

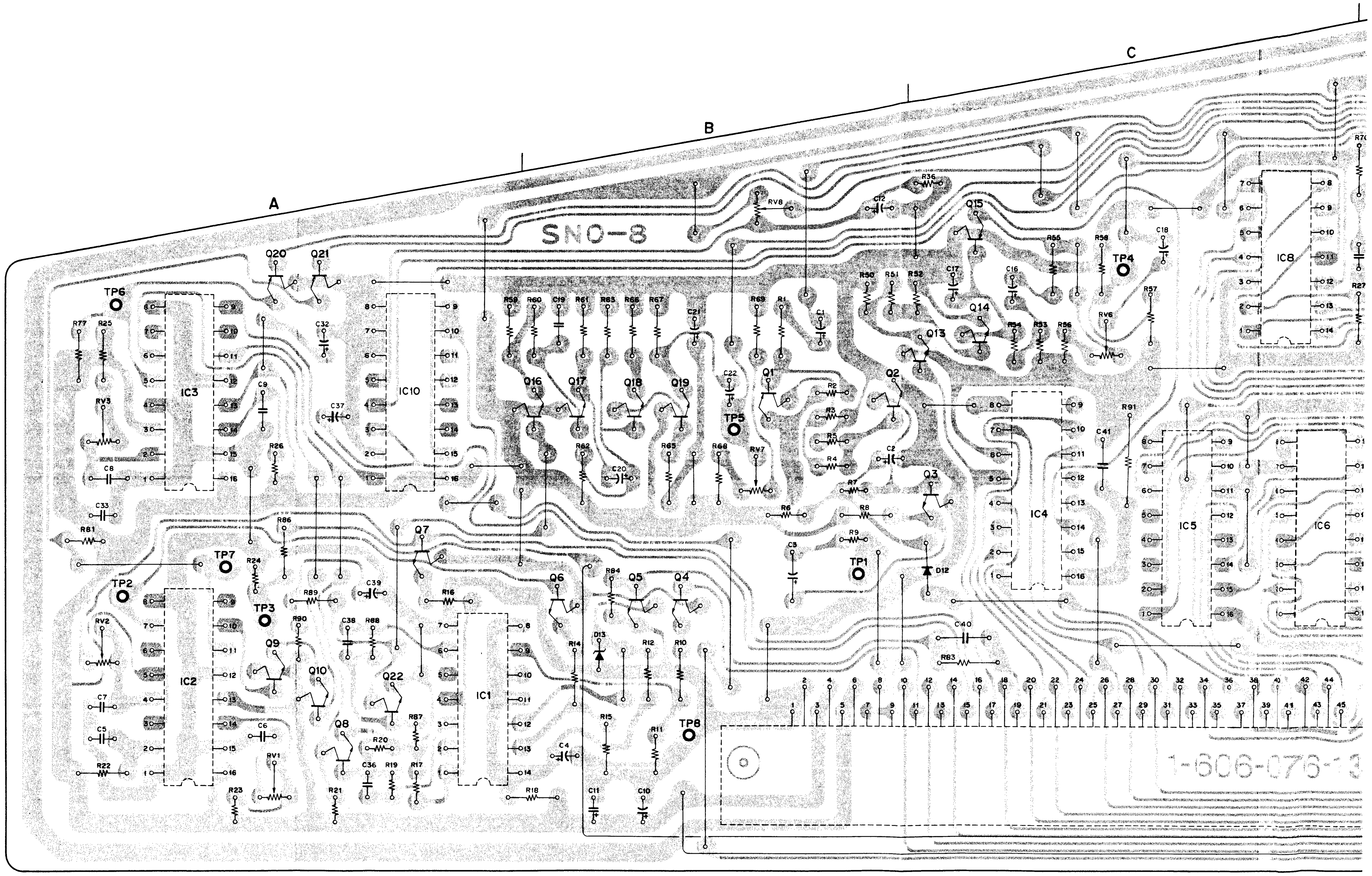

SG-35 BOARD
VBS
C46
D1 CLAMP
Q1 VIDEO AMP
L3,C4 3.58MHz TRAP
Q2 Y BUFF
Q5 BACK PORCH CLAMP
Q3,Q4 CLAMP PULSE GEN
Q6 Y BUFF
Q7 PEAK DET
IC1 COMPARATOR
IC6
INT/EXT DETECTOR V/H SEPARATOR
HR
VR
ENT/EXT
L ALT
L ALT/ PAL PULSE DETECTOR
L ALT RESET
L ALT RESET
BF
TGC/BF PULSE GEN
TGC
PHASE COMPARATOR
EXT SC
INT SC
SC COMP
C13,L5 BPF
Q8 CHROMA AMP
Q9 CHROMA BUFF
Q10,Q11 LIMITER
Q12 SC BUFF
IC3 H PHASE SHIFTER
IC4
H RESET
V RESET
INT/EXT
H: EXT MODE
+5V
RV1 3.58MHz ADJ
IC9
VCO1 14MHz VCO
4fsc
IC9
C24,C26 LPF
IC5 DC AMP
VD
S1 V BLKG WIDTH
19H
20H
21H
IC10~IC12
BLKG REGEN
RV2 H BLKG WIDTH
RV3 V BLKG WIDTH
RV4 PRE BLKG WIDTH
IC3, IC13
PRE BLKG GEN
HD
VD
SYNC
BF
CK
SC
IC2 1/2 COUNT
L7 LPF
Q13 SC BUFF
C29, L11 LPF
C48 H CONT
C53 BLKG
C63 PRE BLKG
C54 HD
C55 VD
C52 SYNC
C51 BF
C49 2SC
C56 SC
IC9
IC7, IC8 SC DUTY 50% SET
IC7, IC8 SC PHASE SHIFTER
0~180°
C58 SC CONT
C59 SC 0°/180°

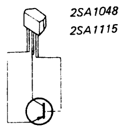
SG-34 BOARD SYNC GENERATOR SYSTEM BLOCK DIAGRAM
[For SEG-2000AP/APM use]

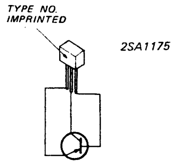

SG-34 BOARD
VBS
C46
D1
CLAMP
Q1
VIDEO AMP
L3, C4
3.58MHz TRAP
Q2
Y BUFF
Q5
BACK PORCH CLAMP
Q3, Q4
CLAMP PULSE GEN
Q6
Y BUFF
Q7
PEAK DET
IC1
COMPARATOR
C13, L5
BPF
Q8
CHROMA AMP
Q9
CHROMA BUFF
Q10, Q11
LIMITER
Q12
SC BUFF
IC6
CK
1/2
INT HD
PHASE COMP
EXT
H COMP
H COMP
EXT SYNC
INT·EXT DET/ V·H SEP TIMING
INT/EXT
HR
VR
L ALT
L ALT/ PAL PULSE DETECTOR
L ALT RESET
L ALT RESET
TGC/BF PULSE GEN
BF
TGC
TGC
EXT SC
INT SC
SC COMP
IC2
1/2 COUNTER
L7
LPF
C49
2SC
C48
H CONT
IC3
H PHASE SHIFTER
RV2 PRE BLKG WIDTH
IC3, IC10
PRE BLKG GEN
C65
⎍ PRE BLKG
C29, C30
LPF
Q13
BUFF
VCO2
VCO
PAL: 14.2MHz
PAL-M: 14.3MHz
IC4
CK
CK
INT/EXT
V RESET
L ALT RESET
SYNTHESIZER
FH
VD
HD
SYNC
BF
BLKG
L ALT
C55
⊔ VD
C54
⊔ HD
C52
⊔ SYNC
C51
⊔ BF
C53
⊔ BLKG
C56
⊔ L ALT
RV1 SUB-CARRIER ADJ
PAL: 4.43MHz
PAL-M: 3.58MHz
⊔ VD
IC9
IC9
EXT
C23, C25
LPF
IC5
DC AMP
VCO1
VCO
PAL: 17.7MHz
PAL-M: 14.3MHz
OFF SET
1/7
1/87
1/2
PHASE COMP
H COMP
FIELD
1/625
1/8
SC RESET
1/4
SC
Q14
SC BUFF
L12, C32
LPF
C57
SC
IC9
IC7, IC8
SC DUTY 50% SET
IC7, IC8
SC PHASE SHIFTER
0~180°
C59
SC CONT
C60
SC 0°/180°

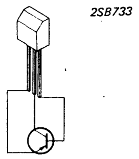
SECTION 11
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

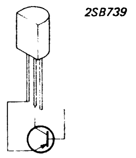
CH-7 BOARD
– SOLDERING SIDE –

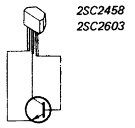

A
B
C
SNO-8
IC1
IC2
IC3
IC4
IC5
IC6
IC8
IC10
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
D12
D13
RV1
RV2
RV3
RV6
RV7
RV8
1-606-076-1

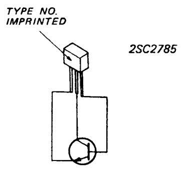

2SA1048
2SA1115

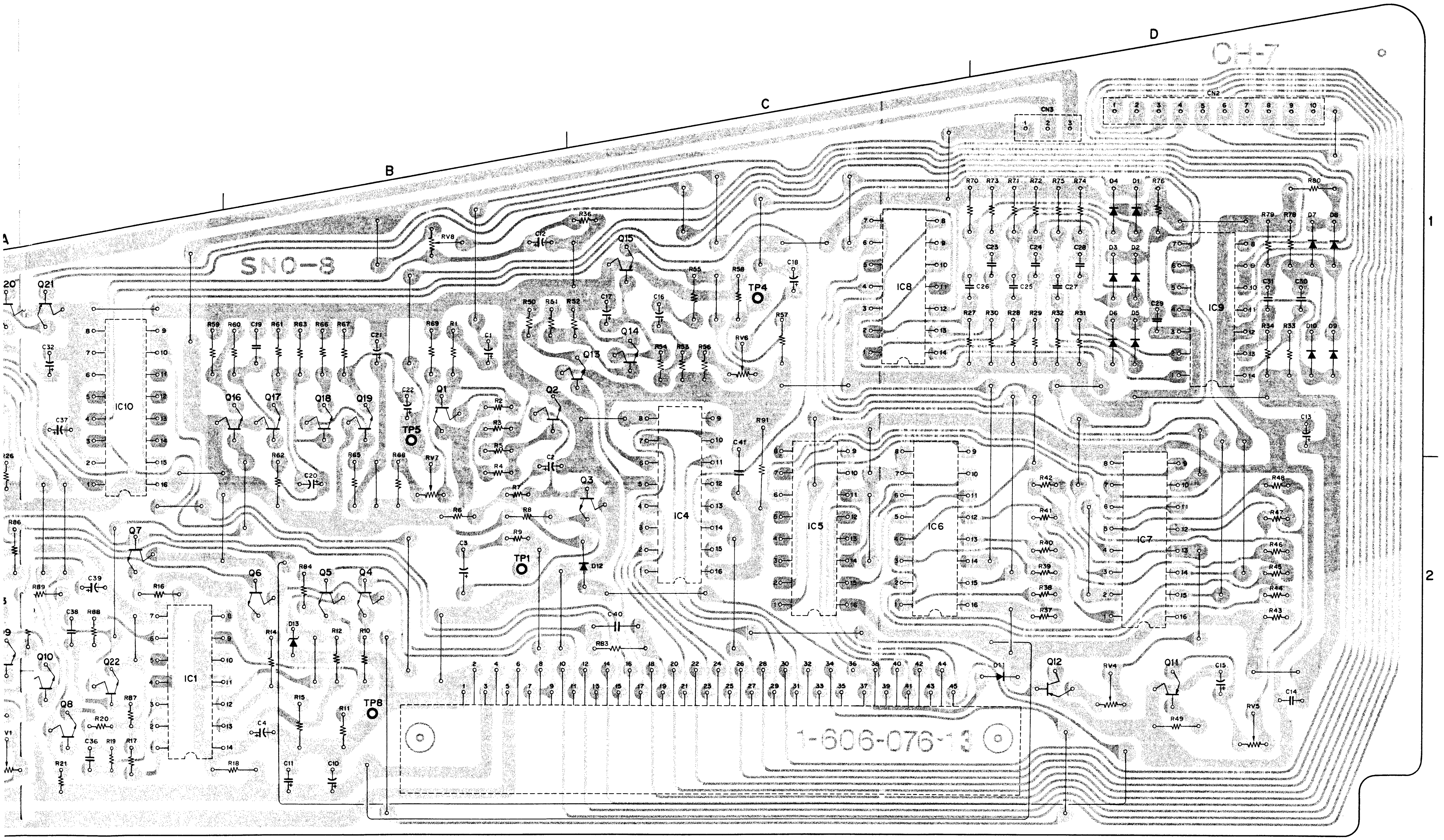

TYPE NO. IMPRINTED
2SA1175





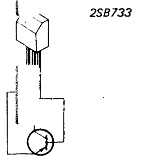

2SC2458
2SC2603

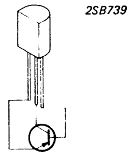

TYPE NO. IMPRINTED
2SC2785

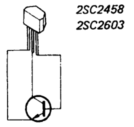

A
B
C
D
1
2
CH-7
SNO-8
CN2
CN3
IC1
IC4
IC5
IC6
IC7
IC8
IC9
IC10
TP1
TP4
TP5
TP8
1-606-076-13

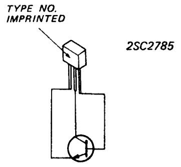
D1	D - 1
D2	D - 1
D3	D - 1
D4	D - 1
D5	D - 1
D6	D - 1
D7	D - 1
D8	D - 1
D9	D - 1
D10	D - 1
D11	D - 2
D12	C - 2
D13	B - 2
IC1	A - 2
IC2	A - 2
IC3	A - 1
IC4	C - 2
IC5	C - 2
IC6	C - 2
IC7	D - 2
IC8	C - 1
IC9	D - 1
IC10	A - 1
Q1	B - 1
Q2	B - 1
Q3	C - 2
Q4	B - 2
Q5	B - 2
Q6	B - 2
Q7	A - 2
Q8	A - 2
Q9	A - 2
Q10	A - 2
Q11	D - 2
Q12	D - 2
Q13	C - 1
Q14	C - 1
Q15	C - 1
Q16	B - 1
Q17	B - 1
Q18	B - 1
Q19	B - 1
Q20	A - 1
Q21	A - 1
Q22	A - 2
RV1	A - 2
RV2	A - 2
RV3	A - 1
RV4	D - 2
RV5	D - 2
RV6	C - 1
RV7	B - 2
RV8	B - 1
TP1	B - 2
TP2	A - 2
TP3	A - 2
TP4	C - 1
TP5	B - 1
TP6	A - 1
TP7	A - 2
TP8	B - 2

CH-7 BOARD
1-606-076-12, 13
SEG-2000/2000A
SEG-2000P/2000AP
SEG-2000PM/2000APM

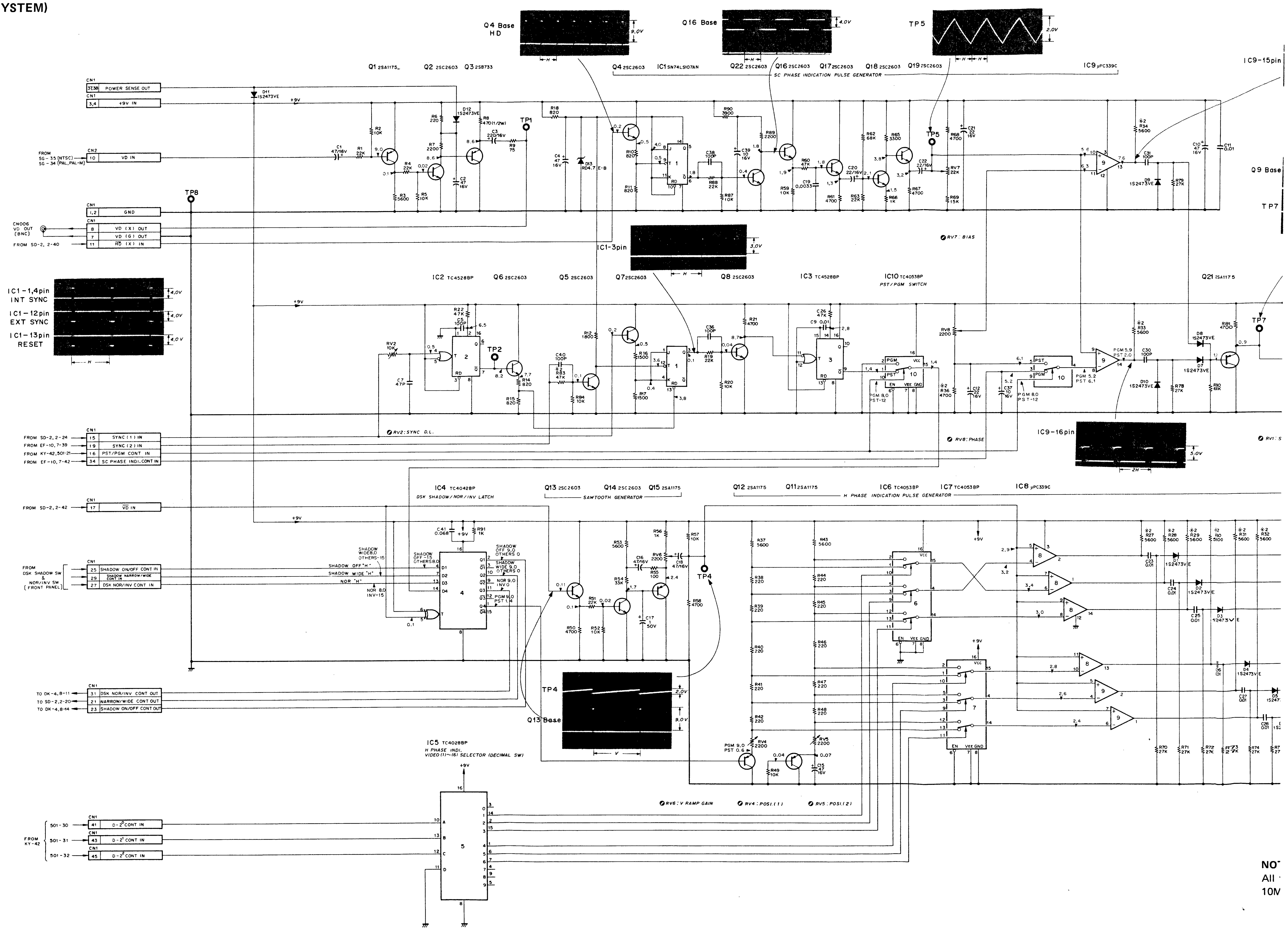


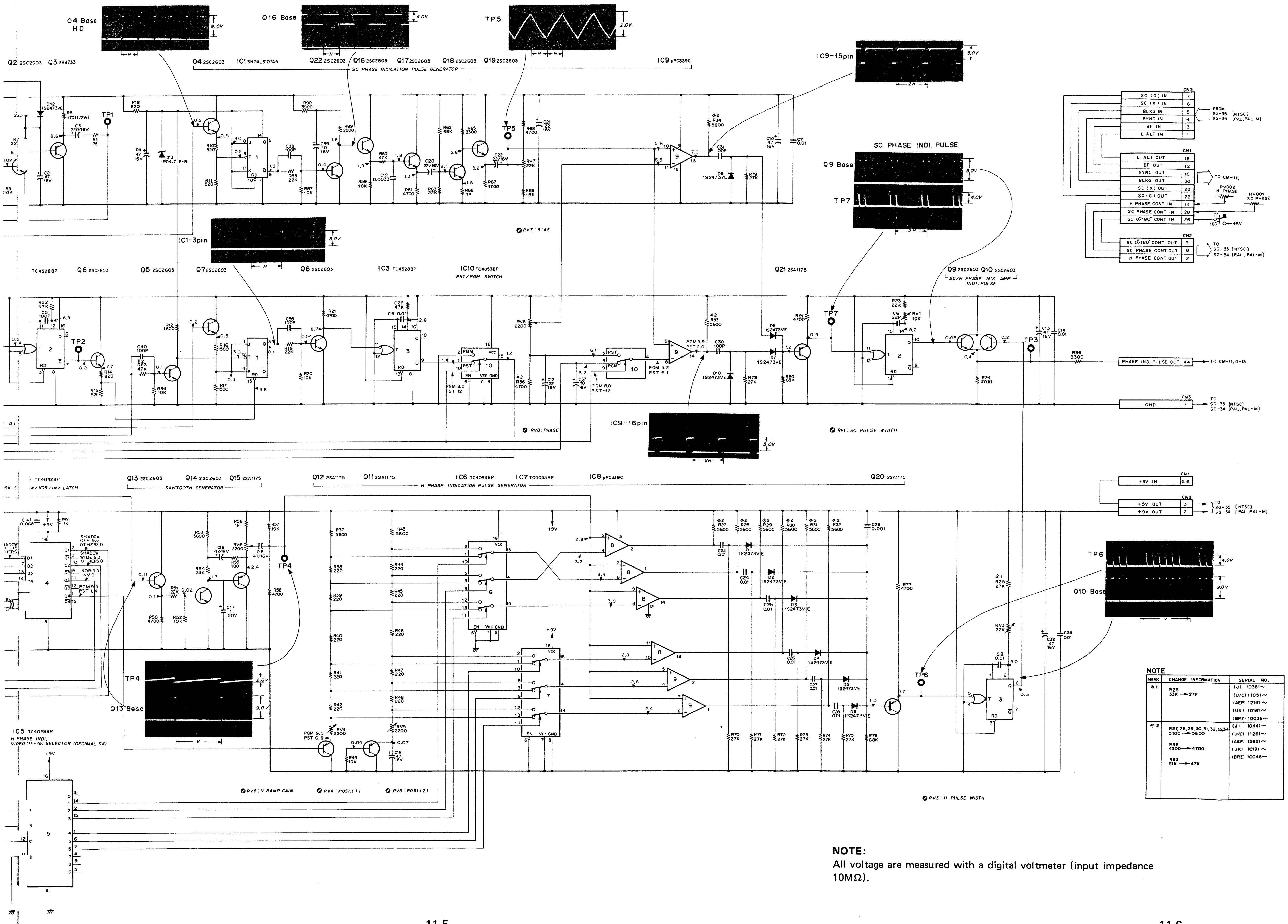



2SC2458
2SC2603


TYPE NO. IMPRINTED
2SC2785

CH-7 BOARD (PHASE INDICATION SYSTEM)


Q4 Base HD
Q16 Base
TP5
IC9–15pin
Q1 2SA1175
Q2 2SC2603
Q3 2SB733
Q4 2SC2603
IC1 SN74LS107AN
Q22 2SC2603
Q16 2SC2603
Q17 2SC2603
Q18 2SC2603
Q19 2SC2603
IC9 μPC339C
SC PHASE INDICATION PULSE GENERATOR
POWER SENSE OUT
+9V IN
FROM SG-35 (NTSC) SG-34 (PAL,PAL-M)
VD IN
GND
CN006 VD OUT (BNC)
VD (X) OUT
VD (G) OUT
HD (X) IN
FROM SD-2, 2-40
TP1
TP8
TP5
IC1-3pin
IC1-1,4pin INT SYNC
IC1-12pin EXT SYNC
IC1-13pin RESET
RV7: BIAS
Q9 Base
TP7
IC2 TC4528BP
Q6 2SC2603
Q5 2SC2603
Q7 2SC2603
Q8 2SC2603
IC3 TC4528BP
IC10 TC4053BP
PST/PGM SWITCH
Q21 2SA1175
TP2
RV2: SYNC D.L.
RV8: PHASE
IC9-16pin
FROM SD-2, 2-24
FROM EF-10, 7-39
FROM KY-42, 501-21
FROM EF-10, 7-42
SYNC (1) IN
SYNC (2) IN
PST/PGM CONT IN
SC PHASE INDI. CONT IN
FROM SD-2, 2-42
VD IN
IC4 TC4042BP
DSK SHADOW/NOR/INV LATCH
Q13 2SC2603
Q14 2SC2603
Q15 2SA1175
SAWTOOTH GENERATOR
Q12 2SA1175
Q11 2SA1175
IC6 TC4053BP
IC7 TC4053BP
IC8 μPC339C
H PHASE INDICATION PULSE GENERATOR
FROM DSK SHADOW SW & NOR/INV SW (FRONT PANEL)
SHADOW ON/OFF CONT IN
SHADOW NARROW/WIDE CONT IN
DSK NOR/INV CONT IN
SHADOW OFF "H"
SHADOW WIDE "H"
NOR "H"
TP4
TO DK-4, 8-11
TO SD-2, 2-20
TO DK-4, 8-44
DSK NOR/INV CONT OUT
NARROW/WIDE CONT OUT
SHADOW ON/OFF CONT OUT
Q13 Base
IC5 TC4028BP
H PHASE INDI. VIDEO (1)~(6) SELECTOR (DECIMAL SW)
RV6: V RAMP GAIN
RV4: POSI. (1)
RV5: POSI. (2)
FROM KY-42
501-30
501-31
501-32
D-2⁰ CONT IN
D-2¹ CONT IN
D-2² CONT IN
RV1: S
NO
All
10M


Q4 Base HD
9.0V
Q16 Base
4.0V
TP5
2.0V
IC9-15pin
5.0V
2H
Q2 2SC2603 Q3 2SB733
Q4 2SC2603
IC1 SN74LS107AN
Q22 2SC2603
Q16 2SC2603
Q17 2SC2603
Q18 2SC2603
Q19 2SC2603
IC9 μPC339C
SC PHASE INDICATION PULSE GENERATOR
TP1
TP2
TP3
TP4
TP6
TP7
IC1-3pin
3.0V
SC PHASE INDI. PULSE
Q9 Base
TP7
TC4528BP
Q6 2SC2603
Q5 2SC2603
Q7 2SC2603
Q8 2SC2603
IC3 TC4528BP
IC10 TC4053BP
PST/PGM SWITCH
Q21 2SA1175
Q9 2SC2603 Q10 2SC2603
SC/H PHASE MIX AMP INDI. PULSE
RV7: BIAS
RV8: PHASE
RV1: SC PULSE WIDTH
IC9-16pin
TC4042BP
NOW/NOR/INV LATCH
Q13 2SC2603
Q14 2SC2603
Q15 2SA1175
SAWTOOTH GENERATOR
Q12 2SA1175
Q11 2SA1175
IC6 TC4053BP
IC7 TC4053BP
IC8 μPC339C
H PHASE INDICATION PULSE GENERATOR
Q20 2SA1175
TP6
Q10 Base
Q13 Base
IC5 TC4028BP
H PHASE INDI. VIDEO (1)~(6) SELECTOR (DECIMAL SW)
RV6: V RAMP GAIN
RV4: POSI.(1)
RV5: POSI.(2)
RV3: H PULSE WIDTH
CN2
SC (G) IN 7
SC (X) IN 6
BLKG IN 5
SYNC IN 4
BF IN 3
L ALT IN 1
FROM SC-35 (NTSC) SG-34 (PAL, PAL-M)
CN1
L ALT OUT 18
BF OUT 12
SYNC OUT 10
BLKG OUT 30
SC (X) OUT 20
SC (G) OUT 22
H PHASE CONT IN 14
SC PHASE CONT IN 28
SC 0/180° CONT IN 26
TO CM-11
RV002 H PHASE
RV001 SC PHASE
0° 180° +5V
CN2
SC 0/180° CONT OUT 9
SC PHASE CONT OUT 8
H PHASE CONT OUT 2
TO SG-35 (NTSC) SG-34 (PAL, PAL-M)
PHASE IND. PULSE OUT 44
TO CM-11, 4-13
CN3
GND 1
TO SG-35 (NTSC) SG-34 (PAL, PAL-M)
CN1
+5V IN 5,6
CN3
+5V OUT 3
+9V OUT 2
TO SG-35 (NTSC) SG-34 (PAL, PAL-M)

NOTE

NARK	CHANGE INFORMATION	SERIAL NO.
※1	R25 33K → 27K	(J) 10381~ (U/C) 11051~ (AEP) 12141~ (UK) 10161~ (BRZ) 10036~
※2	R27, 28, 29, 30, 31, 32, 33, 34 5100 → 5600 R36 4300 → 4700 R83 51K → 47K	(J) 10441~ (U/C) 11261~ (AEP) 12821~ (UK) 10191~ (BRZ) 10046~

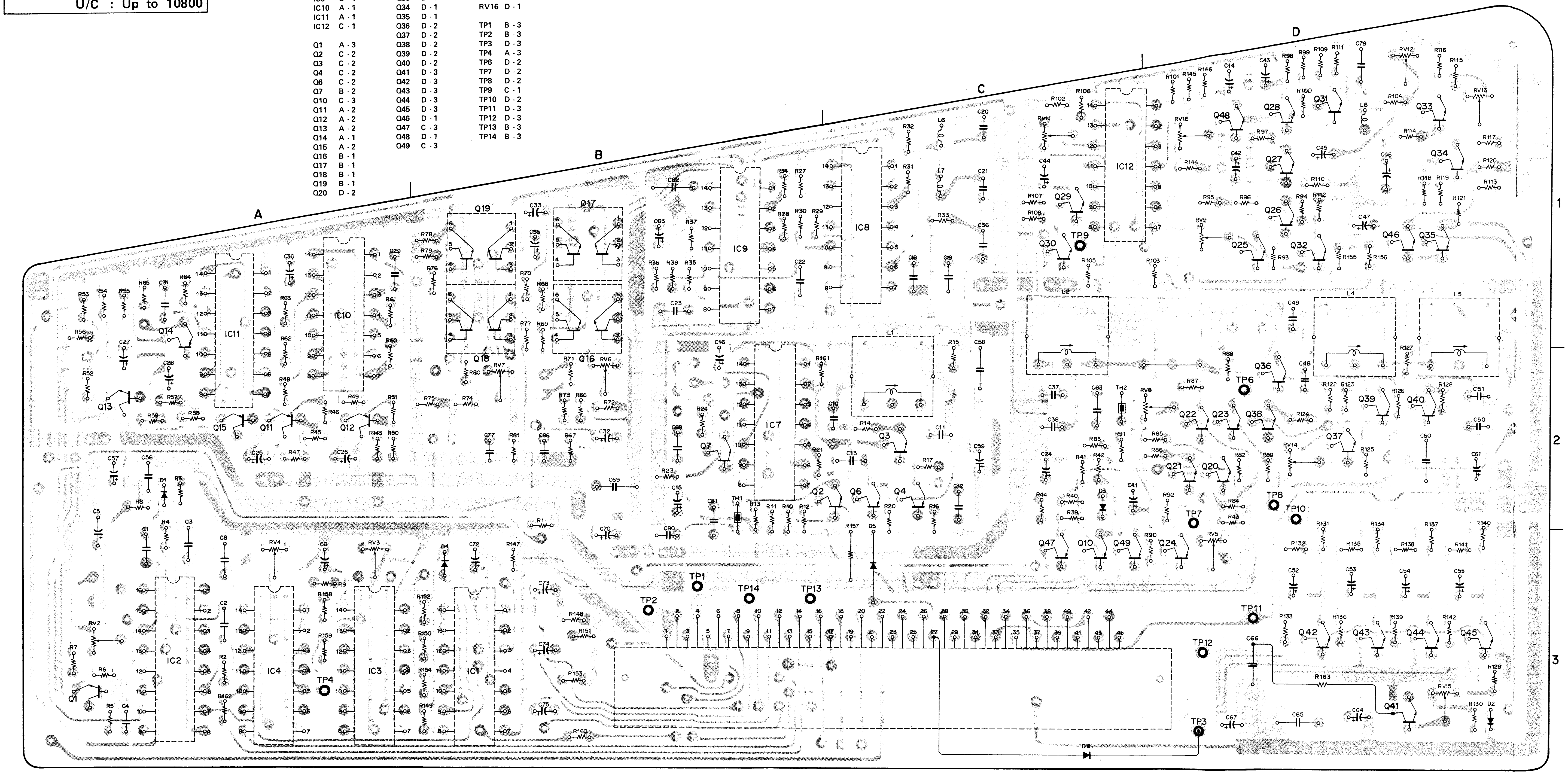
NOTE:

All voltage are measured with a digital voltmeter (input impedance 10MΩ).

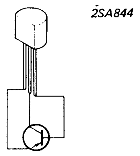
CM-11A BOARD
[For SEG-2000A use]

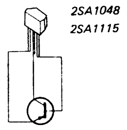
Serial No. J	:	Up to 10280
U/C	:	Up to 10800

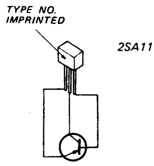
D1	A - 2
D2	D - 3
D3	C - 2
D4	B - 3
D5	C - 3
IC1	B - 3
IC2	A - 3
IC3	A - 3
IC4	A - 3
IC7	B - 2
IC8	C - 1
IC9	B - 1
IC10	A - 1
IC11	A - 1
IC12	C - 1
Q1	A - 3
Q2	C - 2
Q3	C - 2
Q4	C - 2
Q6	C - 2
Q7	B - 2
Q10	C - 3
Q11	A - 2
Q12	A - 2
Q13	A - 2
Q14	A - 1
Q15	A - 2
Q16	B - 1
Q17	B - 1
Q18	B - 1
Q19	B - 1
Q20	D - 2
Q21	D - 2
Q22	D - 2
Q23	D - 2
Q24	D - 3
Q25	D - 1
Q26	D - 1
Q27	D - 1
Q28	D - 1
Q29	C - 1
Q30	C - 1
Q31	D - 1
Q32	D - 1
Q33	D - 1
Q34	D - 1
Q35	D - 1
Q36	D - 2
Q37	D - 2
Q38	D - 2
Q39	D - 2
Q40	D - 2
Q41	D - 3
Q42	D - 3
Q43	D - 3
Q44	D - 3
Q45	D - 3
Q46	D - 1
Q47	C - 3
Q48	D - 1
Q49	C - 3
RV2	A - 3
RV3	A - 3
RV4	A - 3
RV5	D - 3
RV6	B - 2
RV7	B - 2
RV8	D - 2
RV9	D - 1
RV11	C - 1
RV12	D - 1
RV13	D - 1
RV14	D - 2
RV15	D - 3
RV16	D - 1
TP1	B - 3
TP2	B - 3
TP3	D - 3
TP4	A - 3
TP6	D - 2
TP7	D - 2
TP8	D - 2
TP9	C - 1
TP10	D - 2
TP11	D - 3
TP12	D - 3
TP13	B - 3
TP14	B - 3

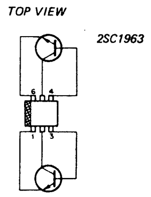

A
B
C
D
1
2
3
IC1
IC2
IC3
IC4
IC7
IC8
IC9
IC10
IC11
IC12
L1
L2
L4
L5
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14

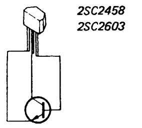
CM-11A BOARD
1-606-071-22
SEG-2000/2010A

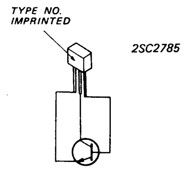


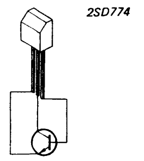

2SA1048
2SA1115

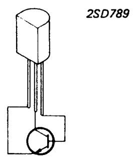

TYPE NO. IMPRINTED
2SA1175

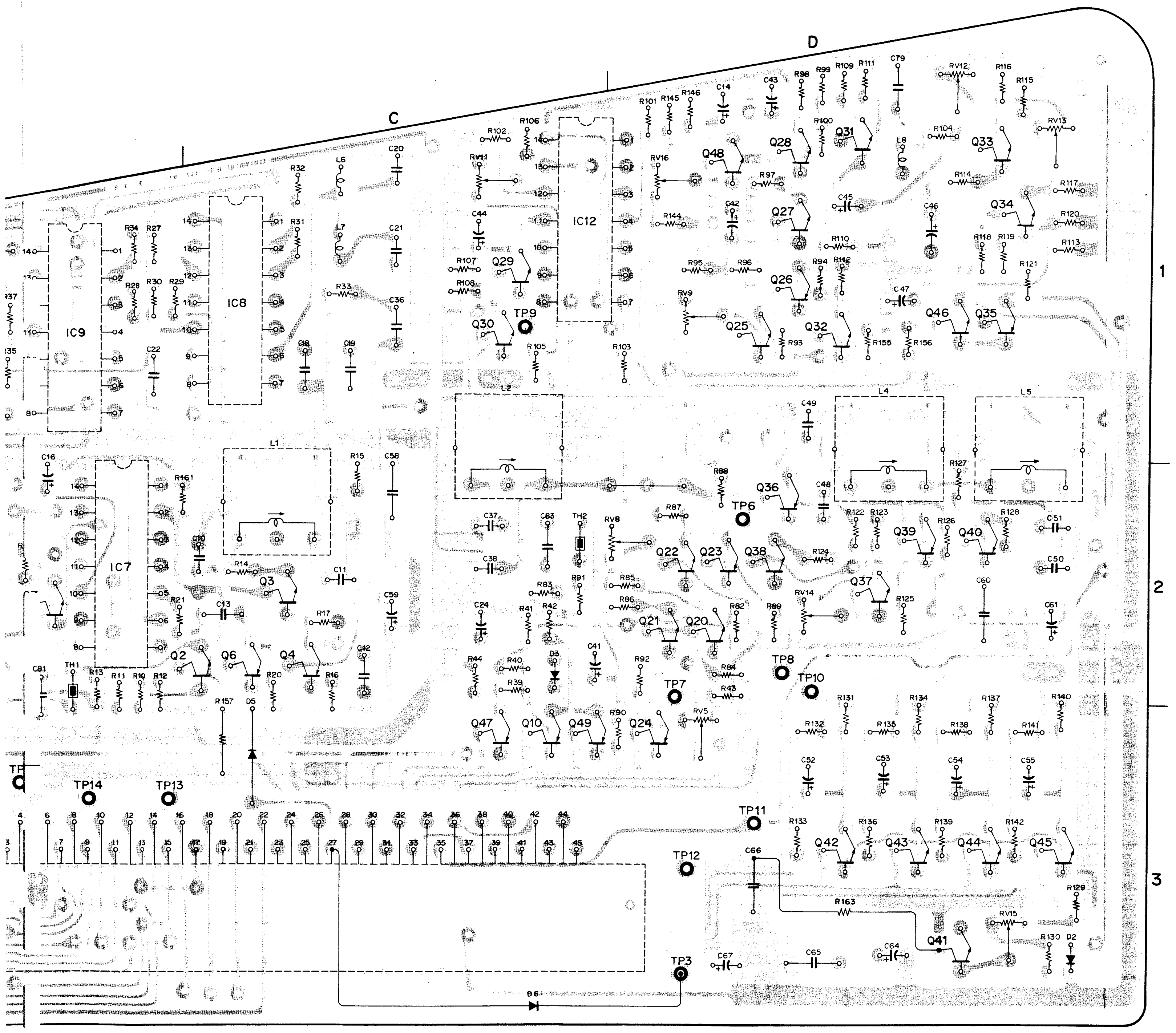

TOP VIEW
2SC1963
6
4
1
3


2SC2458
2SC2603

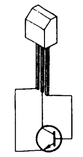

TYPE NO. IMPRINTED
2SC2785



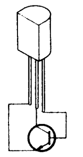



C
D
1
2
3
IC7
IC8
IC9
IC12
L1
L2
L4
L5
TP3
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TH1
TH2

CM-11A BOARD
1-606-071-22
SEG-2000/2000A

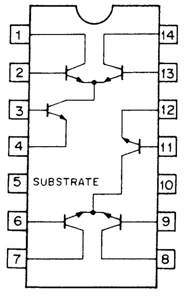


2SD774

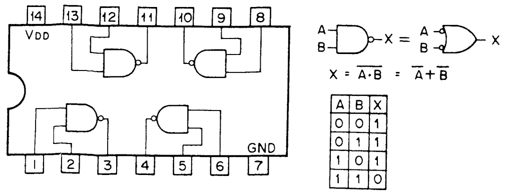


2SD789

CA3054 (RCA)
DIFFERENTIAL AMPLIFIER
− TOP VIEW −



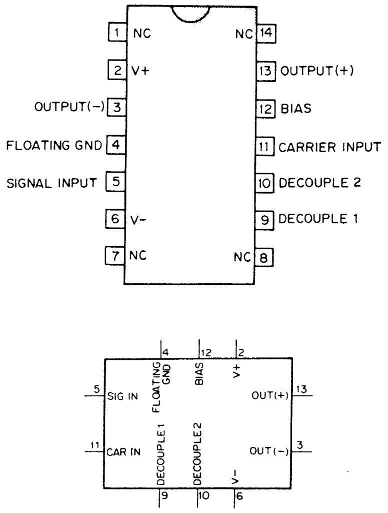
TC4011BP (TOSHIBA)
C-MOS 2-INPUT NAND GATE
− TOP VIEW −



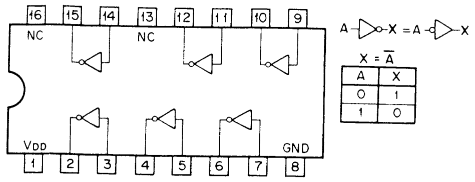
$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

CX120 (SONY)
DOUBLE-BALANCED MOD/DEMOD
− TOP VIEW −


1 NC
2 V+
3 OUTPUT(−)
4 FLOATING GND
5 SIGNAL INPUT
6 V−
7 NC
8 NC
9 DECOUPLE 1
10 DECOUPLE 2
11 CARRIER INPUT
12 BIAS
13 OUTPUT(+)
14 NC
SIG IN
CAR IN
FLOATING GND
BIAS
V+
OUT(+)
OUT(−)
DECOUPLE 1
DECOUPLE 2
V−

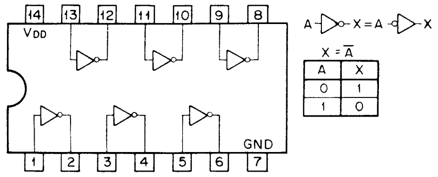
TC4049BP (TOSHIBA)
C-MOS INVERTING TYPE BUFFER/CONVERTER
− TOP VIEW −


NC
NC
VDD
GND

$X = \overline{A}$

A	X
0	1
1	0

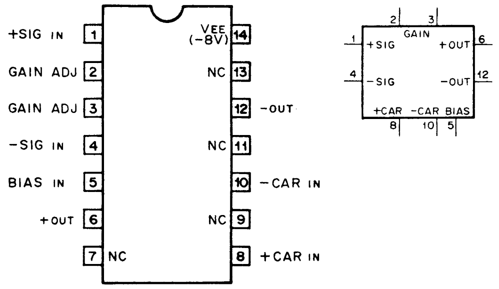
TC4069UBP (TOSHIBA)
C-MOS INVERTER
− TOP VIEW −



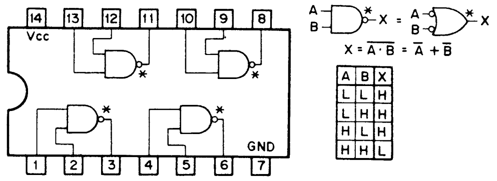
$X = \overline{A}$

A	X
0	1
1	0

MC1496P (MOTOROLA)
BALANCED MODULATOR/DEMODULATOR
− TOP VIEW −


+SIG IN 1
GAIN ADJ 2
GAIN ADJ 3
−SIG IN 4
BIAS IN 5
+OUT 6
7 NC
8 +CAR IN
9 NC
10 −CAR IN
11 NC
12 −OUT
13 NC
14 VEE (−8V)
GAIN
+SIG
−SIG
+OUT
−OUT
+CAR
−CAR
BIAS

SN74LS26N (TI)
TTL 2-INPUT NAND GATE WITH OPEN-COLLECTOR
− TOP VIEW −



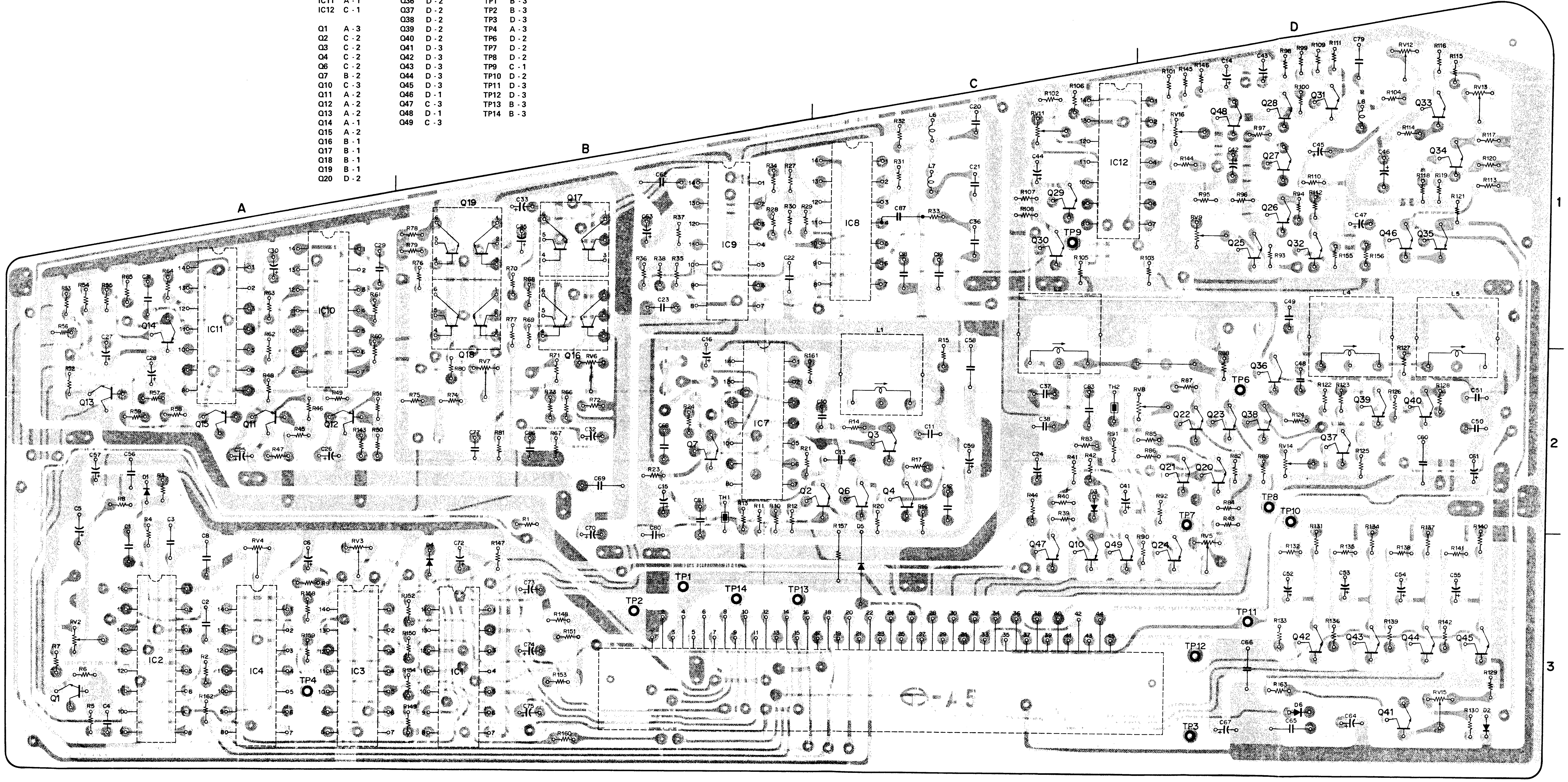
$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	X
L	L	H
L	H	H
H	L	H
H	H	L

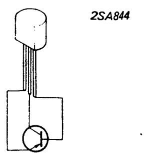
CM-11A BOARD
[for SEG-2000A use]

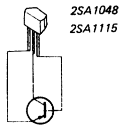
Serial No. J	: 10281 and higher
U/C	: 10801 and higher

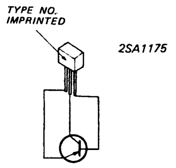
D1	A - 2
D2	D - 3
D3	C - 2
D4	B - 3
D5	C - 3
D6	D - 3
IC1	B - 3
IC2	A - 3
IC3	A - 3
IC4	A - 3
IC7	B - 2
IC8	C - 1
IC9	B - 1
IC10	A - 1
IC11	A - 1
IC12	C - 1
Q1	A - 3
Q2	C - 2
Q3	C - 2
Q4	C - 2
Q6	C - 2
Q7	B - 2
Q10	C - 3
Q11	A - 2
Q12	A - 2
Q13	A - 2
Q14	A - 1
Q15	A - 2
Q16	B - 1
Q17	B - 1
Q18	B - 1
Q19	B - 1
Q20	D - 2
Q21	D - 2
Q22	D - 2
Q23	D - 2
Q24	D - 3
Q25	D - 1
Q26	D - 1
Q27	D - 1
Q28	D - 1
Q29	C - 1
Q30	C - 1
Q31	D - 1
Q32	D - 1
Q33	D - 1
Q34	D - 1
Q35	D - 1
Q36	D - 2
Q37	D - 2
Q38	D - 2
Q39	D - 2
Q40	D - 2
Q41	D - 3
Q42	D - 3
Q43	D - 3
Q44	D - 3
Q45	D - 3
Q46	D - 1
Q47	C - 3
Q48	D - 1
Q49	C - 3
RV2	A - 3
RV3	A - 3
RV4	A - 3
RV5	D - 3
RV6	B - 2
RV7	B - 2
RV8	D - 2
RV9	D - 1
RV11	C - 1
RV12	D - 1
RV13	D - 1
RV14	D - 2
RV15	D - 3
RV16	D - 1
TP1	B - 3
TP2	B - 3
TP3	D - 3
TP4	A - 3
TP6	D - 2
TP7	D - 2
TP8	D - 2
TP9	C - 1
TP10	D - 2
TP11	D - 3
TP12	D - 3
TP13	B - 3
TP14	B - 3

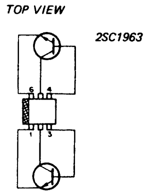

A
B
C
D
1
2
3
IC1
IC2
IC3
IC4
IC7
IC8
IC9
IC10
IC11
IC12
L1
L4
L5
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14

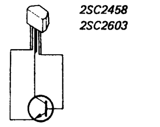
CM-11A BOARD
1-606-071-23
SEG-2000/SEG-2000A

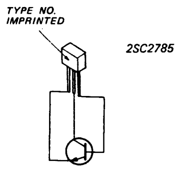


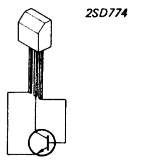

2SA1048
2SA1115

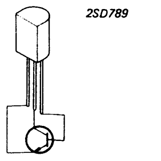

TYPE NO.
IMPRINTED
2SA1175


TOP VIEW
2SC1963
6
4
1
3

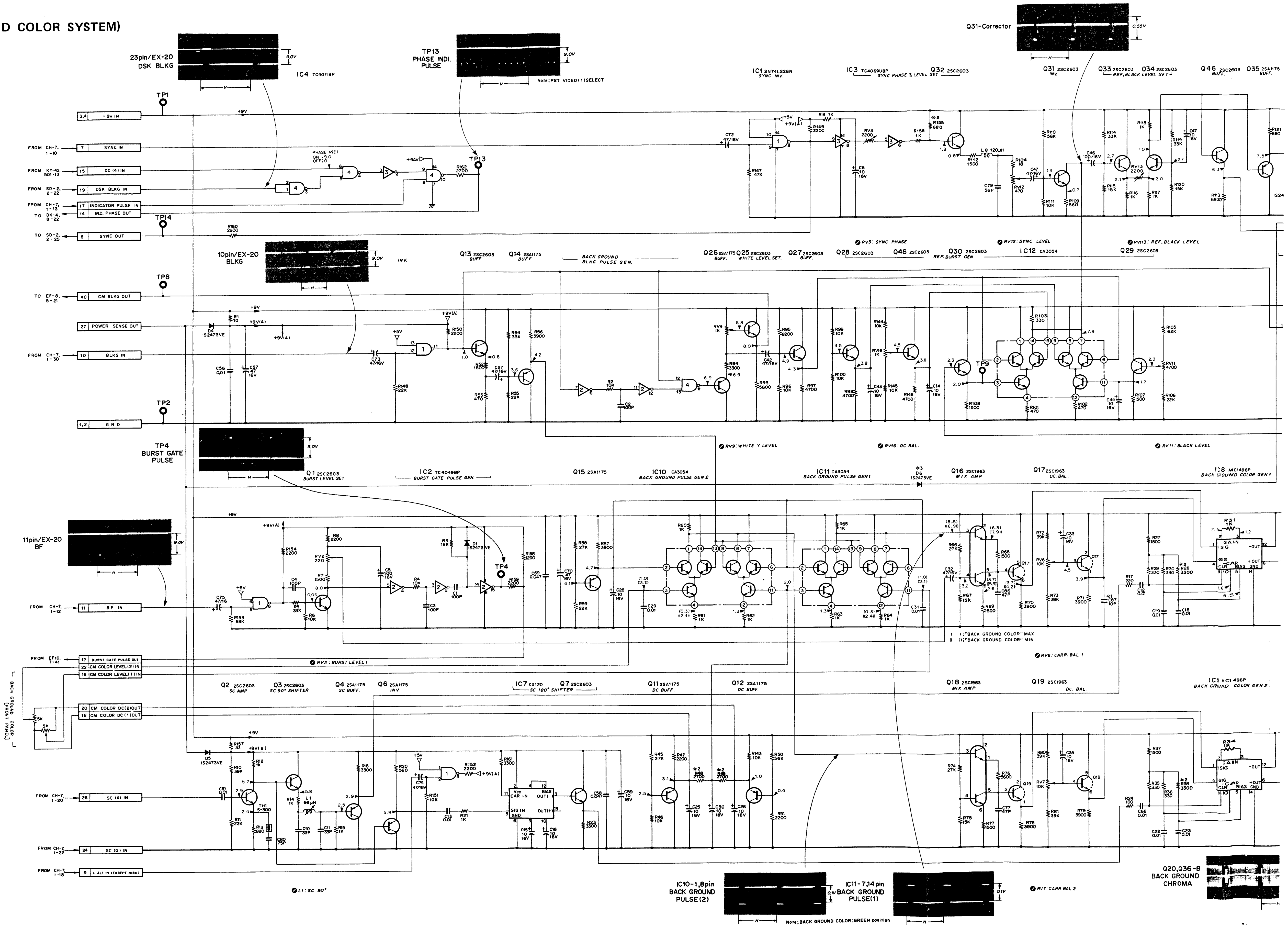

2SC2458
2SC2603

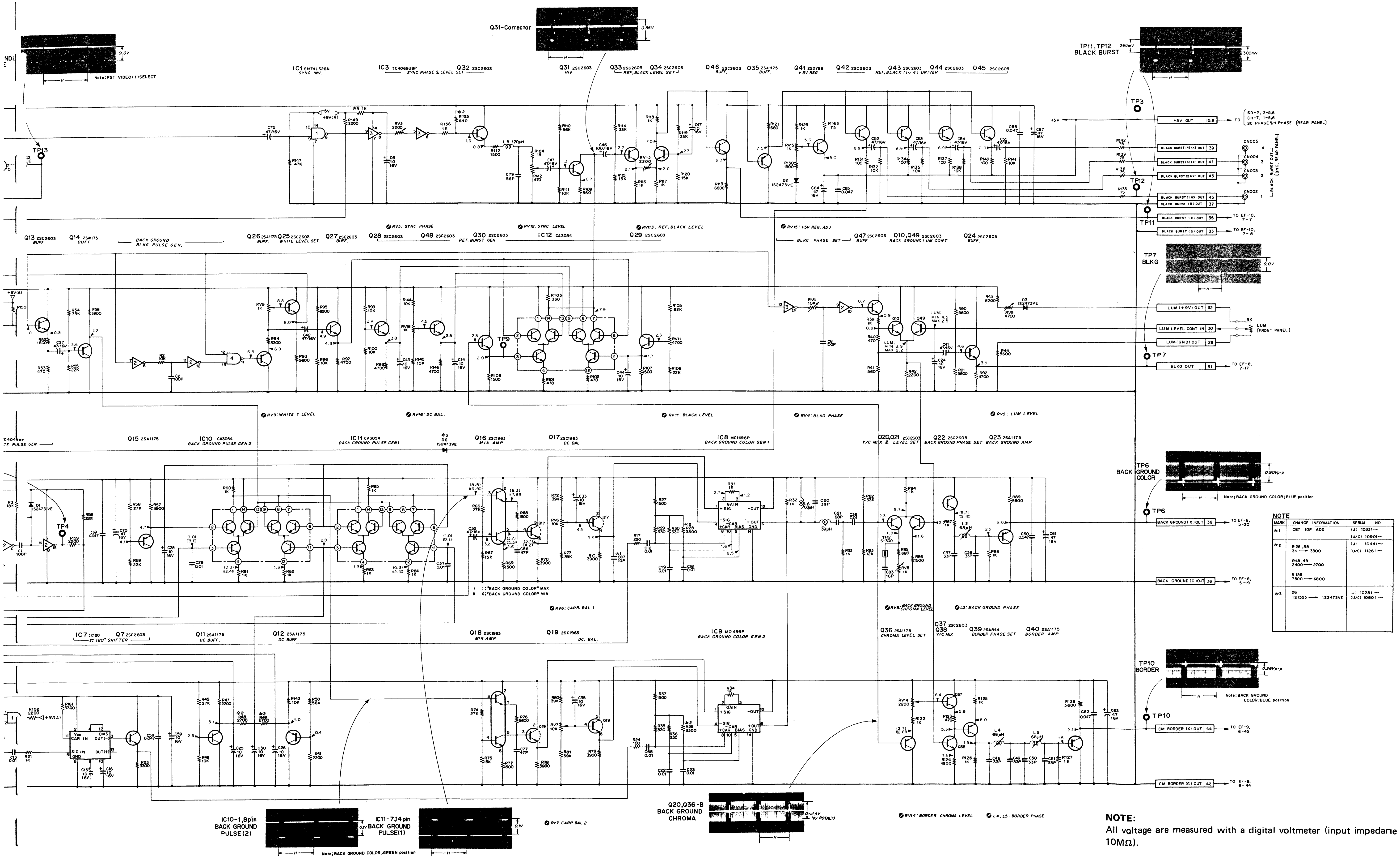

TYPE NO.
IMPRINTED
2SC2785





CM-11A BOARD (BACK GROUND COLOR SYSTEM)
[For SEG-2000A use]


23pin/EX-20
DSK BLKG
IC4 TC4011BP
TP13
PHASE INDI. PULSE
Note; PST VIDEO(1)SELECT
Q31-Corrector
TP1
+9V IN
SYNC IN
DC (4) IN
DSK BLKG IN
INDICATOR PULSE IN
IND. PHASE OUT
SYNC OUT
TP14
10pin/EX-20
BLKG
TP8
CM BLKG OUT
POWER SENSE OUT
BLKG IN
TP2
GND
TP4
BURST GATE PULSE
11pin/EX-20
BF
BF IN
BURST GATE PULSE OUT
CM COLOR LEVEL(2)IN
CM COLOR LEVEL(1)IN
CM COLOR DC(2)OUT
CM COLOR DC(1)OUT
SC (X) IN
SC (G) IN
L ALT IN (EXCEPT MIBC)
BACK GROUND COLOR (FRONT PANEL)
IC1 SN74LS26N SYNC INV.
IC3 TC4069UBP SYNC PHASE & LEVEL SET
Q32 2SC2603
Q31 2SC2603 INV.
Q33 2SC2603 Q34 2SC2603 REF. BLACK LEVEL SET
Q46 2SC2603 BUFF.
Q35 2SA1175 BUFF.
RV3: SYNC PHASE
RV12: SYNC LEVEL
RV13: REF. BLACK LEVEL
Q13 2SC2603 BUFF
Q14 2SA1175 BUFF
BACK GROUND BLKG PULSE GEN.
Q26 2SA1175 BUFF.
Q25 2SC2603 WHITE LEVEL SET.
Q27 2SC2603 BUFF.
Q28 2SC2603
Q48 2SC2603
Q30 2SC2603 REF. BURST GEN
IC12 CA3054
Q29 2SC2603
TP9
RV9: WHITE Y LEVEL
RV16: DC BAL.
RV11: BLACK LEVEL
Q1 2SC2603 BURST LEVEL SET
IC2 TC4049BP BURST GATE PULSE GEN.
Q15 2SA1175
IC10 CA3054 BACK GROUND PULSE GEN 2
IC11 CA3054 BACK GROUND PULSE GEN 1
D6 1S2473VE
Q16 2SC1963 MIX AMP
Q17 2SC1963 DC. BAL
IC8 MC1496P BACK GROUND COLOR GEN 1
RV2: BURST LEVEL 1
( ): "BACK GROUND COLOR" MAX
[ ]: "BACK GROUND COLOR" MIN
RV6: CARR. BAL 1
Q2 2SC2603 SC AMP
Q3 2SC2603 SC 90° SHIFTER
Q4 2SA1175 SC BUFF.
Q6 2SA1175 INV.
IC7 CX120
Q7 2SC2603 SC 180° SHIFTER
Q11 2SA1175 DC BUFF.
Q12 2SA1175 DC BUFF.
Q18 2SC1963 MIX AMP
Q19 2SC1963 DC. BAL.
IC1 MC1496P BACK GROUND COLOR GEN 2
L1: SC 90°
IC10-1,8pin BACK GROUND PULSE(2)
IC11-7,14pin BACK GROUND PULSE(1)
Note; BACK GROUND COLOR; GREEN position
RV7: CARR. BAL 2
Q20,036-B BACK GROUND CHROMA


Q31-Corrector
0.55V
TP11,TP12 BLACK BURST
290mV
300mV
Note;PST VIDEO(1)SELECT
9.0V
IC1 SN74LS26N SYNC INV
IC3 TC4069UBP SYNC PHASE & LEVEL SET
Q32 2SC2603
Q31 2SC2603 INV
Q33 2SC2603 Q34 2SC2603 REF. BLACK LEVEL SET
Q46 2SC2603 BUFF
Q35 2SA1175 BUFF
Q41 2SD789 +5V REG
Q42 2SC2603
Q43 2SC2603 Q44 2SC2603 REF. BLACK (1~4) DRIVER
Q45 2SC2603
TP3
+5V OUT
TO SD-2, 2-5,6 CH-7, 1-5,6 SC PHASE & H.PHASE (REAR PANEL)
BLACK BURST (4)(X) OUT 39
BLACK BURST (3)(X) OUT 41
BLACK BURST (2)(X) OUT 43
BLACK BURST (1)(X) OUT 45
BLACK BURST (G) OUT 37
BLACK BURST (X) OUT 35
BLACK BURST (G) OUT 33
CN005
CN004
CN003
CN002
BLACK BURST OUT (BNC, REAR PANEL)
TO EF-10, 7-7
TO EF-10, 7-8
TP12
TP11
TP13
RV3: SYNC PHASE
RV12: SYNC LEVEL
RV13: REF. BLACK LEVEL
RV15: +5V REG. ADJ
Q13 2SC2603 BUFF
Q14 2SA1175 BUFF
BACK GROUND BLKG PULSE GEN.
Q26 2SA1175 BUFF.
Q25 2SC2603 WHITE LEVEL SET.
Q27 2SC2603 BUFF
Q28 2SC2603
Q48 2SC2603
Q30 2SC2603 REF. BURST GEN
IC12 CA3054
Q29 2SC2603
BLKG PHASE SET
Q47 2SC2603 BUFF
Q10,Q49 2SC2603 BACK GROUND LUM CONT
Q24 2SC2603 BUFF
TP7 BLKG
9.0V
TP9
LUM (+9V) OUT 32
LUM LEVEL CONT IN 30
LUM (GND) OUT 28
BLKG OUT 31
TO EF-8, 7-17
LUM (FRONT PANEL)
TP7
RV9: WHITE Y LEVEL
RV16: DC BAL.
RV11: BLACK LEVEL
RV4: BLKG PHASE
RV5: LUM LEVEL
Q15 2SA1175
IC10 CA3054 BACK GROUND PULSE GEN 2
IC11 CA3054 BACK GROUND PULSE GEN1
D6 1S2473VE
Q16 2SC1963 MIX AMP
Q17 2SC1963 DC. BAL.
IC8 MC1496P BACK GROUND COLOR GEN 1
Q20,Q21 2SC2603 Y/C MIX & LEVEL SET
Q22 2SC2603 BACK GROUND PHASE SET
Q23 2SA1175 BACK GROUND AMP
TP6 BACK GROUND COLOR
0.90Vp-p
Note; BACK GROUND COLOR; BLUE position
TP6
BACK GROUND (X) OUT 38
TO EF-8, 5-20
BACK GROUND (G) OUT 36
TO EF-8, 5-19
TP4
( ) ; "BACK GROUND COLOR" MAX
( ) ; "BACK GROUND COLOR" MIN
RV6: CARR. BAL 1
RV8: BACK GROUND CHROMA LEVEL
L2: BACK GROUND PHASE
IC7 CX120 SC 180° SHIFTER
Q7 2SC2603
Q11 2SA1175 DC BUFF.
Q12 2SA1175 DC BUFF.
Q18 2SC1963 MIX AMP
Q19 2SC1963 DC. BAL.
IC9 MC1496P BACK GROUND COLOR GEN 2
Q36 2SA1175 CHROMA LEVEL SET
Q37 2SC2603 Q38 Y/C MIX
Q39 2SA844 BORDER PHASE SET
Q40 2SA1175 BORDER AMP
TP10 BORDER
0.36Vp-p
Note; BACK GROUND COLOR; BLUE position
TP10
CM BORDER (X) OUT 44
TO EF-9, 6-45
CM BORDER (G) OUT 42
TO EF-9, 6-44
IC10-1,8pin BACK GROUND PULSE(2)
IC11-7,14pin BACK GROUND PULSE(1)
0.1V
Note; BACK GROUND COLOR; GREEN position
RV7: CARR BAL 2
Q20,Q36-B BACK GROUND CHROMA
1.4V (by ROTALY)
RV14: BORDER CHROMA LEVEL
L4, L5: BORDER PHASE

NOTE

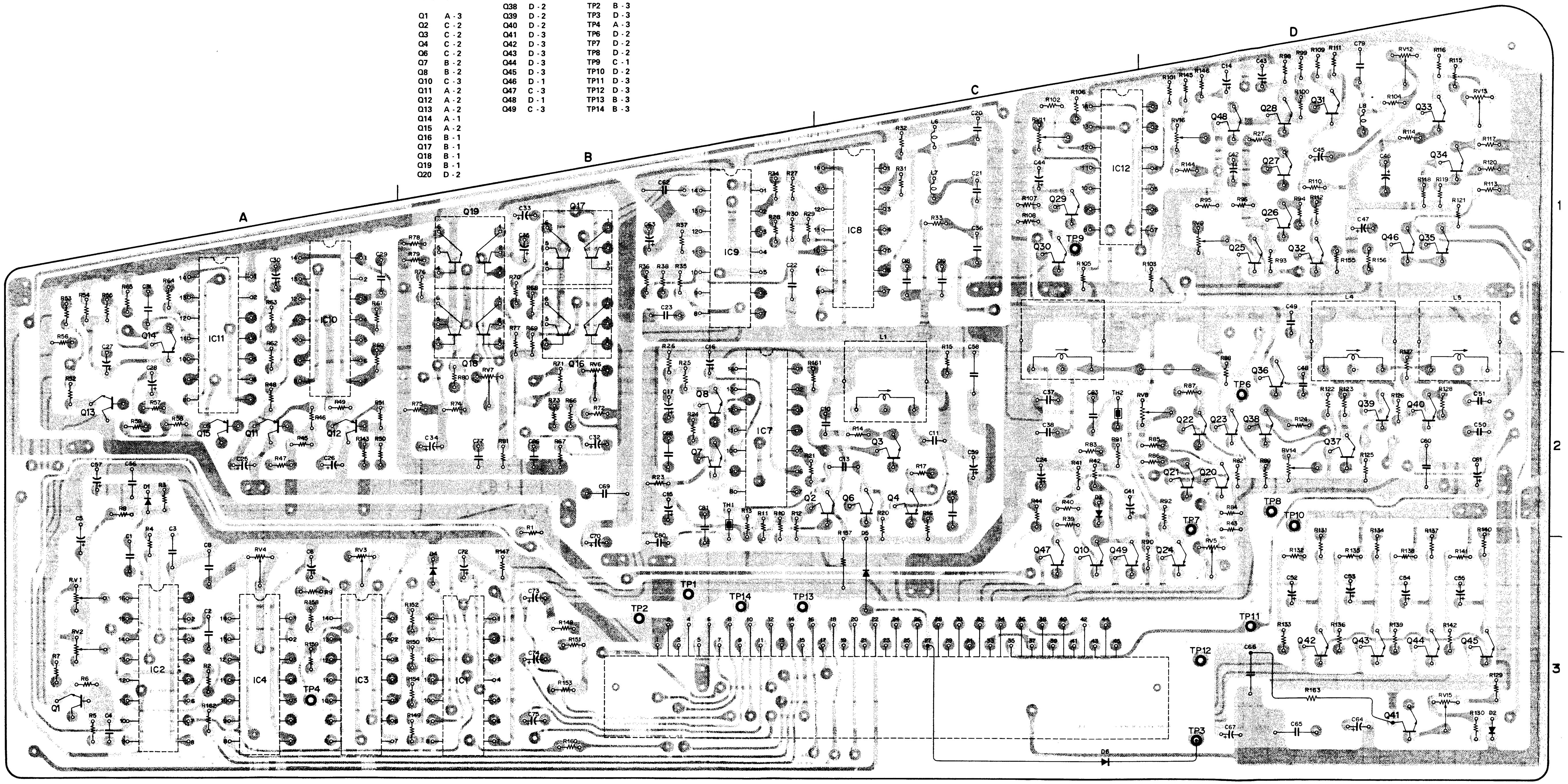
MARK	CHANGE INFORMATION	SERIAL NO.
※1	C87 10P ADD	(J) 10331~ (U/C) 10901~
※2	R28,38 3K → 3300 R48,49 2400 → 2700 R155 7500 → 6800	(J) 10441~ (U/C) 11261~
※3	D6 1S1555 → 1S2473VE	(J) 10281~ (U/C) 10801~

NOTE:
All voltage are measured with a digital voltmeter (input impedane 10MΩ).

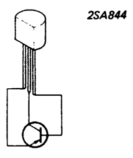
CM-11 BOARD
[For SEG-2000AP/APM use]

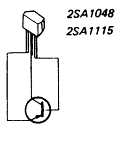
Serial No. AEP : Up to 11330
UK : Up to 10120
BRZ : Up to 10015

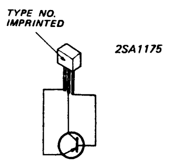
D1	A-2	Q21	D-2	RV1	A-3
D2	D-3	Q22	D-2	RV2	A-3
D3	C-2	Q23	D-2	RV3	A-3
D4	B-3	Q24	D-3	RV4	A-3
D5	C-3	Q25	D-1	RV5	D-3
D6	C-3	Q26	D-1	RV6	B-2
		Q27	D-1	RV7	B-2
IC1	B-3	Q28	D-1	RV8	D-2
IC2	A-3	Q29	C-1	RV9	D-1
IC3	A-3	Q30	C-1	RV11	C-1
IC4	A-3	Q31	D-1	RV12	D-1
IC7	B-2	Q32	D-1	RV13	D-1
IC8	C-1	Q33	D-1	RV14	D-2
IC9	B-1	Q34	D-1	RV15	D-3
IC10	A-1	Q35	D-1	RV16	D-1
IC11	A-1	Q36	D-2		
IC12	C-1	Q37	D-2	TP1	B-3
		Q38	D-2	TP2	B-3
Q1	A-3	Q39	D-2	TP3	D-3
Q2	C-2	Q40	D-2	TP4	A-3
Q3	C-2	Q41	D-3	TP6	D-2
Q4	C-2	Q42	D-3	TP7	D-2
Q6	C-2	Q43	D-3	TP8	D-2
Q7	B-2	Q44	D-3	TP9	C-1
Q8	B-2	Q45	D-3	TP10	D-2
Q10	C-3	Q46	D-1	TP11	D-3
Q11	A-2	Q47	C-3	TP12	D-3
Q12	A-2	Q48	D-1	TP13	B-3
Q13	A-2	Q49	C-3	TP14	B-3
Q14	A-1				
Q15	A-2				
Q16	B-1				
Q17	B-1				
Q18	B-1				
Q19	B-1				
Q20	D-2				

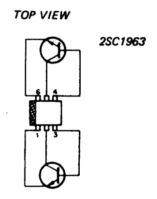

A
B
C
D
1
2
3
IC1
IC2
IC3
IC4
IC7
IC8
IC9
IC10
IC11
IC12
Q1
Q2
Q3
Q4
Q6
Q7
Q8
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q29
Q30
Q31
Q32
Q33
Q34
Q35
Q36
Q37
Q38
Q39
Q40
Q41
Q42
Q43
Q44
Q45
Q46
Q47
Q48
Q49
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
L1
L4
L5
TH1
TH2
D6

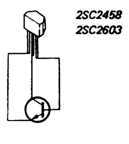
CM-11 BOARD
1-606-071-12
SEG-2000P/2000AP
SEG-2000PM/2000APM

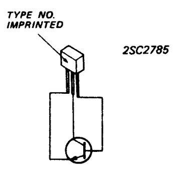


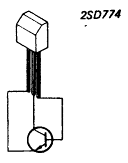

2SA1048
2SA1115

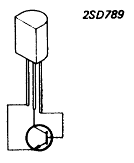

TYPE NO. IMPRINTED
2SA1175

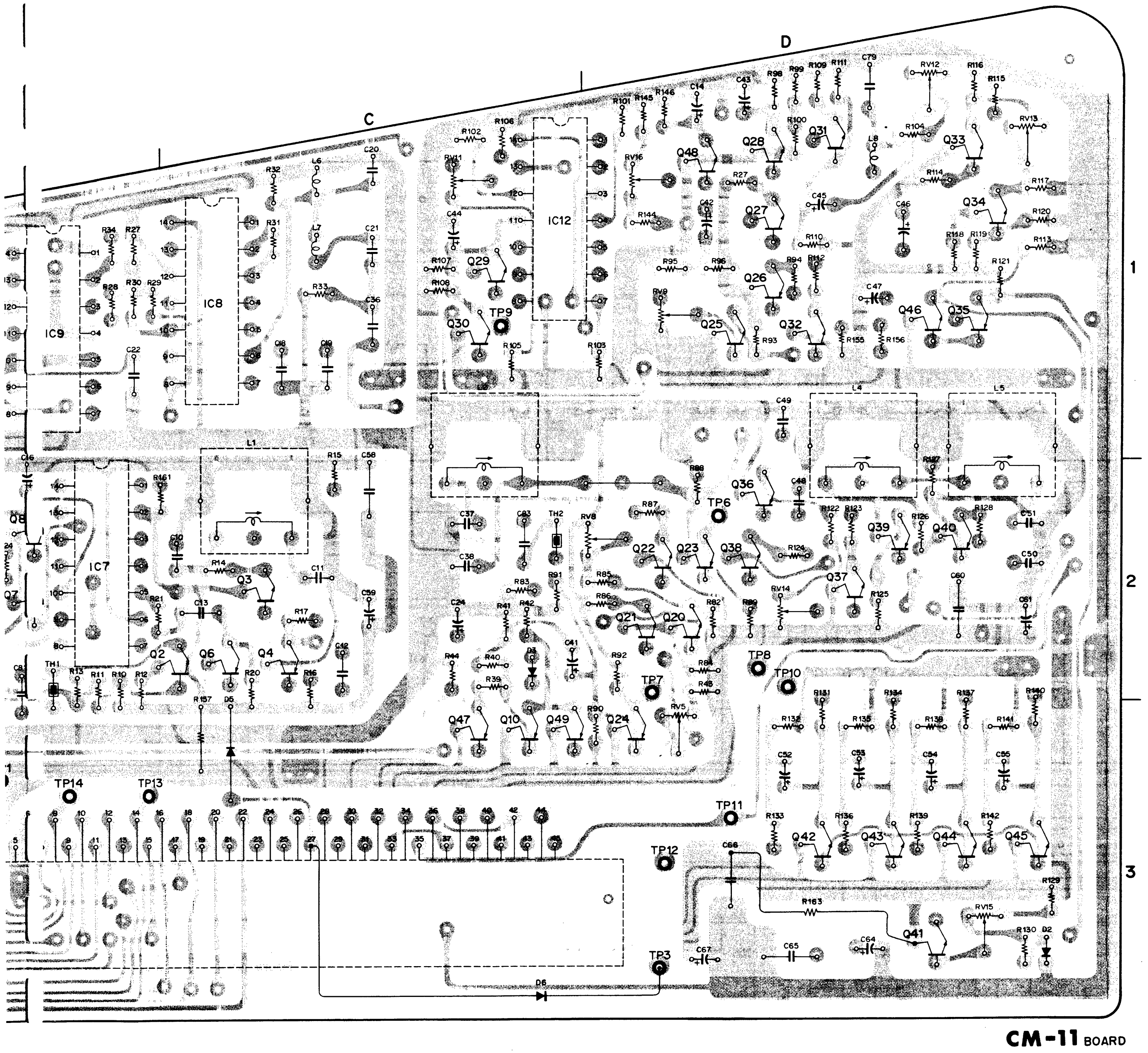

TOP VIEW
2SC1963
6
4
1
3


2SC2458
2SC2603

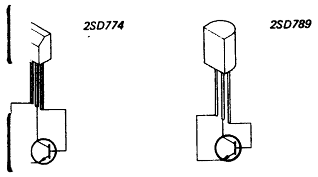

TYPE NO. IMPRINTED
2SC2785



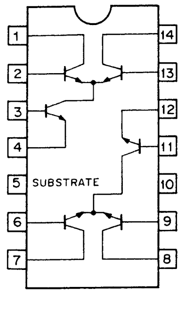



C
D
1
2
3
IC7
IC8
IC9
IC12
L1
L4
L5
TH1
TH2
TP3
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
Q2
Q3
Q4
Q6
Q10
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q29
Q30
Q31
Q32
Q33
Q34
Q35
Q36
Q37
Q38
Q39
Q40
Q41
Q42
Q43
Q44
Q45
Q46
Q47
Q48
Q49
D2
D6
RV5
RV8
RV9
RV11
RV12
RV13
RV14
RV15
RV16

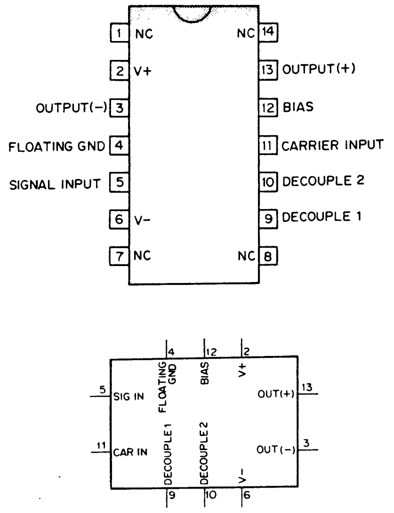
CM-11 BOARD
1-606-071-12
SEG-2000P/2000AP
SEG-2000PM/2000APM


2SD774
2SD789

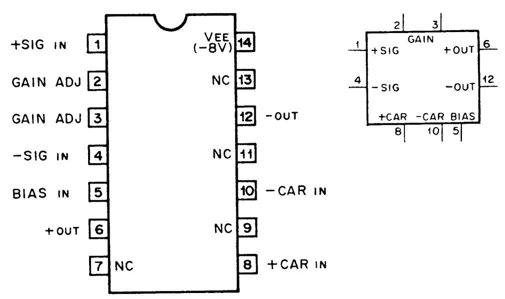
CA3054 (RCA)
DIFFERENTIAL AMPLIFIER
—TOP VIEW—


1
2
3
4
5 SUBSTRATE
6
7
8
9
10
11
12
13
14

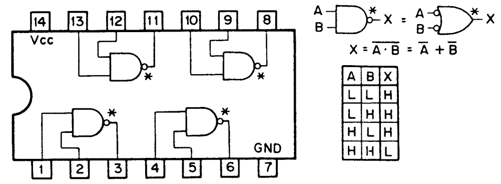
CX120 (SONY)
DOUBLE-BALANCED MOD/DEMOD
-TOP VIEW-


1 NC
2 V+
OUTPUT(−) 3
FLOATING GND 4
SIGNAL INPUT 5
6 V−
7 NC
NC 14
13 OUTPUT(+)
12 BIAS
11 CARRIER INPUT
10 DECOUPLE 2
9 DECOUPLE 1
NC 8
SIG IN
CAR IN
FLOATING GND
BIAS
V+
OUT(+)
OUT(−)
DECOUPLE 1
DECOUPLE 2
V−

MC1496P (MOTOROLA)
BALANCED MODULATOR/DEMODULATOR
-TOP VIEW-


+SIG IN 1
GAIN ADJ 2
GAIN ADJ 3
−SIG IN 4
BIAS IN 5
+OUT 6
7 NC
VEE (−8V) 14
NC 13
12 −OUT
NC 11
10 −CAR IN
NC 9
8 +CAR IN
GAIN
+SIG
−SIG
+OUT
−OUT
+CAR
−CAR
BIAS

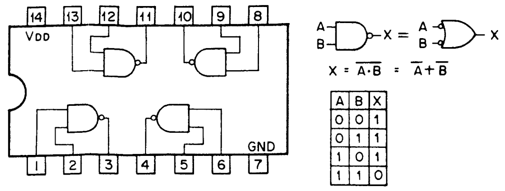
SN74LS26N (TI)
TTL 2-INPUT NAND GATE WITH OPEN-COLLECTOR
-TOP VIEW-


Vcc
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
X

$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	X
L	L	H
L	H	H
H	L	H
H	H	L

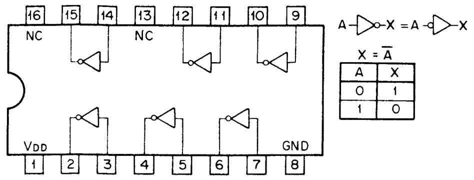
TC4011BP (TOSHIBA)
C-MOS 2-INPUT NAND GATE
-TOP VIEW-


VDD
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
B
X

$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

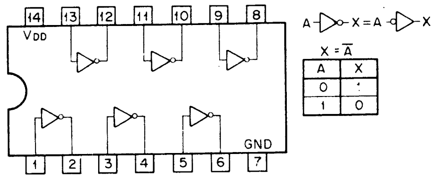
TC4049BP (TOSHIBA)
C-MOS INVERTING TYPE BUFFER/CONVERTER
-TOP VIEW-


NC
NC
VDD
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
A
X

$X = \overline{A}$

A	X
0	1
1	0

TC4069UBP (TOSHIBA)
C-MOS INVERTER
-TOP VIEW-


VDD
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
A
X

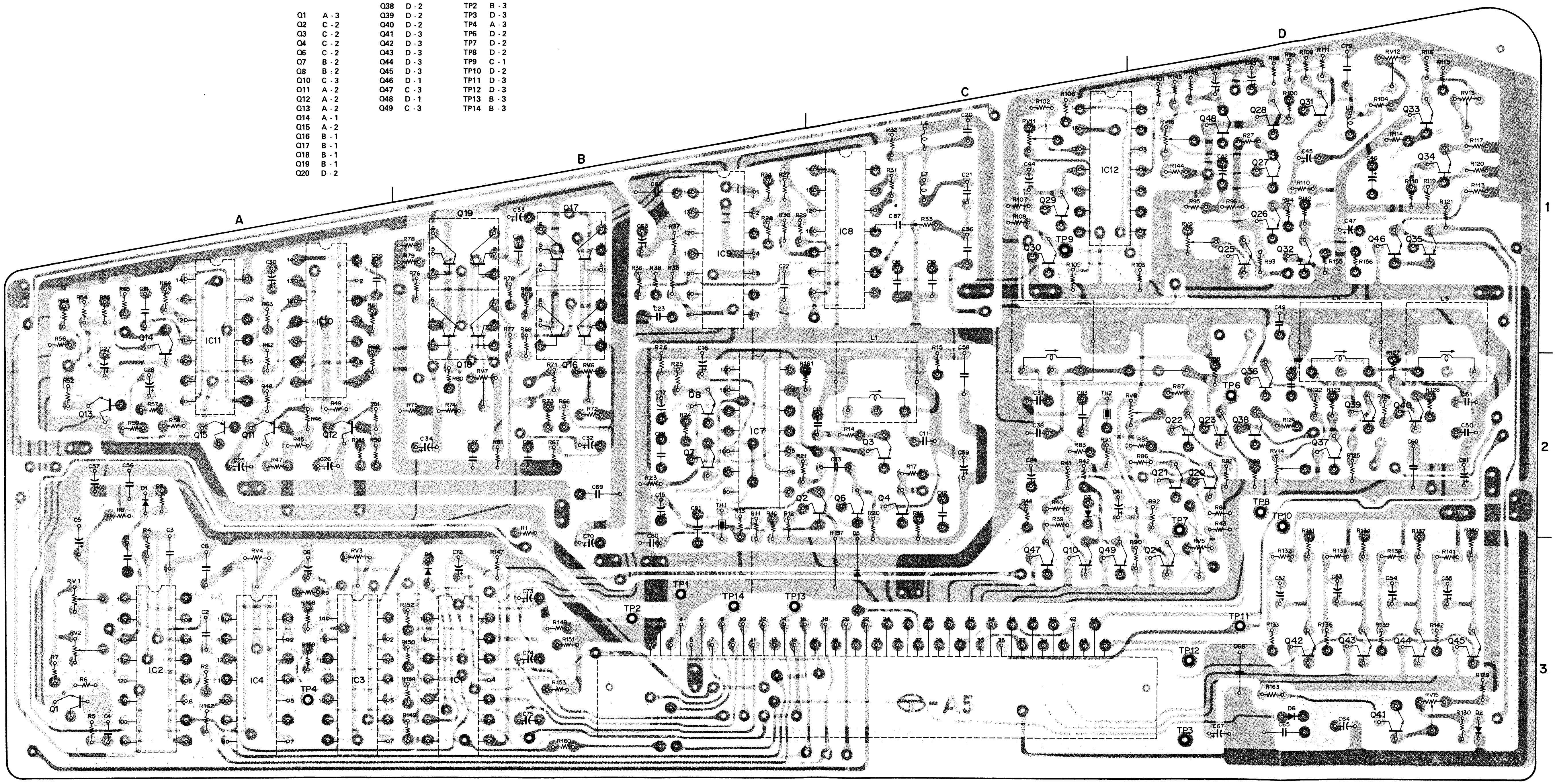
$X = \overline{A}$

A	X
0	1
1	0

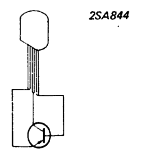
CM-11 BOARD
[for SEG-2000AP/APM use]

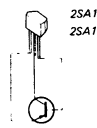
Serial No.		
AEP	:	11331 and higher
UK	:	10121 and higher
BRZ	:	10016 and higher

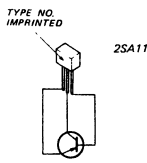
D1	A-2
D2	D-3
D3	C-2
D4	B-3
D5	C-3
D6	C-3
IC1	B-3
IC2	A-3
IC3	A-3
IC4	A-3
IC7	B-2
IC8	C-1
IC9	B-1
IC10	A-1
IC11	A-1
IC12	C-1
Q1	A-3
Q2	C-2
Q3	C-2
Q4	C-2
Q6	C-2
Q7	B-2
Q8	B-2
Q10	C-3
Q11	A-2
Q12	A-2
Q13	A-2
Q14	A-1
Q15	A-2
Q16	B-1
Q17	B-1
Q18	B-1
Q19	B-1
Q20	D-2
Q21	D-2
Q22	D-2
Q23	D-2
Q24	D-3
Q25	D-1
Q26	D-1
Q27	D-1
Q28	D-1
Q29	C-1
Q30	C-1
Q31	D-1
Q32	D-1
Q33	D-1
Q34	D-1
Q35	D-1
Q36	D-2
Q37	D-2
Q38	D-2
Q39	D-2
Q40	D-2
Q41	D-3
Q42	D-3
Q43	D-3
Q44	D-3
Q45	D-3
Q46	D-1
Q47	C-3
Q48	D-1
Q49	C-3
RV1	A-3
RV2	A-3
RV3	A-3
RV4	A-3
RV5	D-3
RV6	B-2
RV7	B-2
RV8	D-2
RV9	D-1
RV11	C-1
RV12	D-1
RV13	D-1
RV14	D-2
RV15	D-3
RV16	D-1
TP1	B-3
TP2	B-3
TP3	D-3
TP4	A-3
TP6	D-2
TP7	D-2
TP8	D-2
TP9	C-1
TP10	D-2
TP11	D-3
TP12	D-3
TP13	B-3
TP14	B-3

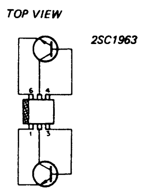

A
B
C
D
1
2
3
IC1
IC2
IC3
IC4
IC7
IC8
IC9
IC10
IC11
IC12
TP1
TP2
TP3
TP4
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
L1
A5

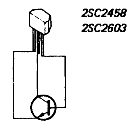
CM-11 BOARD
1-606-071-13
SEG-2000P/2000AP
SEG-2000PM/2000APM

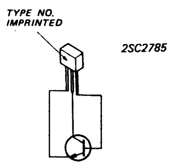


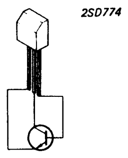

2SA1048
2SA1115

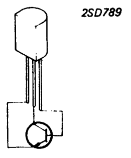

TYPE NO. IMPRINTED
2SA1175


TOP VIEW
2SC1963
6
4
1
3

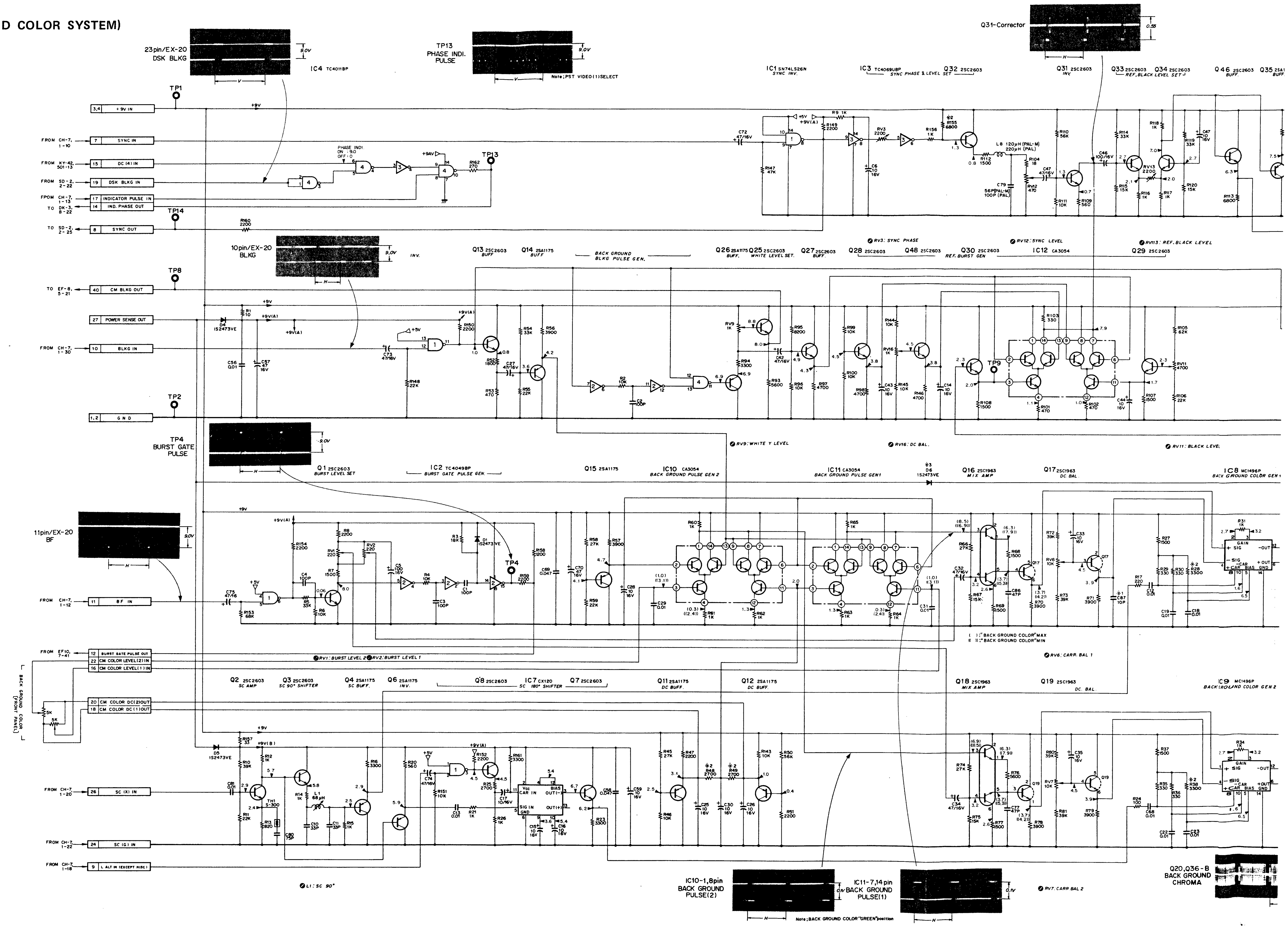

2SC2458
2SC2603

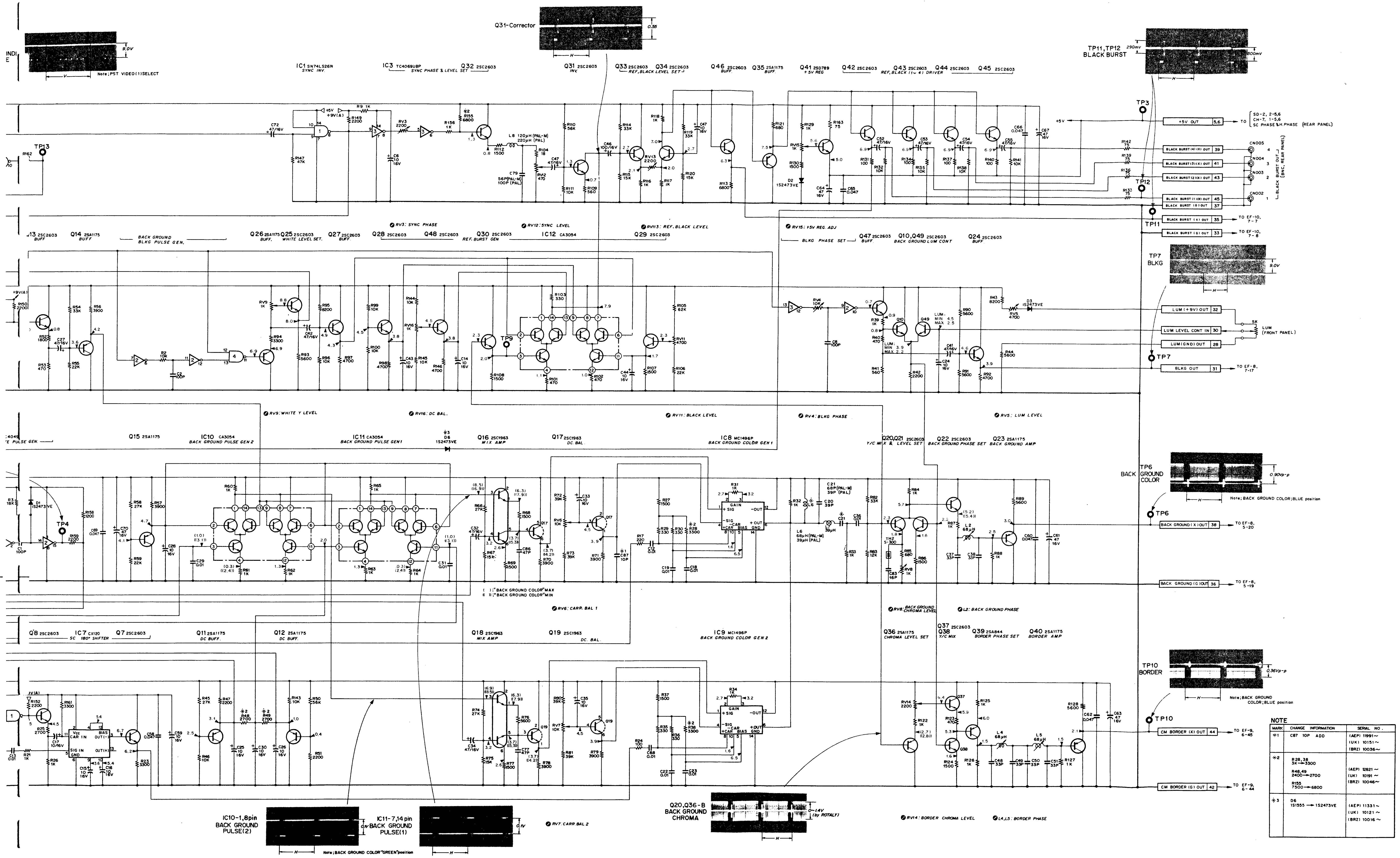

TYPE NO. IMPRINTED
2SC2785





CM-11 BOARD (BACK GROUND COLOR SYSTEM)
[For SEG-2000AP/APM use]


23pin/EX-20
DSK BLKG
9.0V
IC4 TC4011BP
TP13
PHASE INDI. PULSE
9.0V
Note; PST VIDEO(1)SELECT
Q31-Corrector
0.55
IC1 SN74LS26N SYNC INV.
IC3 TC4069UBP SYNC PHASE & LEVEL SET
Q32 2SC2603
Q31 2SC2603 INV.
Q33 2SC2603 Q34 2SC2603 REF.BLACK LEVEL SET
Q46 2SC2603
Q35 2SA1 BUFF
TP1
3,4 +9V IN
FROM CH-7, 1-10
7 SYNC IN
FROM KY-42, 501-13
15 DC 141 IN
FROM SD-2, 2-22
19 DSK BLKG IN
FROM CH-7, 1-13
17 INDICATOR PULSE IN
TO DK-3, 8-22
14 IND. PHASE OUT
TP14
TO SD-2, 2-25
8 SYNC OUT
PHASE INDI ON : 9.0 OFF : 0
L8 120μH (PAL-M) 220μH (PAL)
C79 56P(PAL-M) 100P (PAL)
10pin/EX-20
BLKG
9.0V
INV.
Q13 2SC2603 BUFF
Q14 2SA1175 BUFF
BACK GROUND BLKG PULSE GEN.
Q26 2SA1175 BUFF
Q25 2SC2603 WHITE LEVEL SET
Q27 2SC2603 BUFF
Q28 2SC2603
Q48 2SC2603
RV3: SYNC PHASE
Q30 2SC2603 REF. BURST GEN
RV12: SYNC LEVEL
IC12 CA3054
RV113: REF. BLACK LEVEL
Q29 2SC2603
TP8
TO EF-8, 5-21
40 CM BLKG OUT
27 POWER SENSE OUT
FROM CH-7, 1-30
10 BLKG IN
TP9
TP2
1,2 GND
RV9: WHITE Y LEVEL
RV16: DC BAL.
RV11: BLACK LEVEL
TP4
BURST GATE PULSE
9.0V
Q1 2SC2603 BURST LEVEL SET
IC2 TC4049BP BURST GATE PULSE GEN.
Q15 2SA1175
IC10 CA3054 BACK GROUND PULSE GEN 2
IC11 CA3054 BACK GROUND PULSE GEN1
D6 1S2473VE
Q16 2SC1963 MIX AMP
Q17 2SC1963 DC BAL
IC8 MC1496P BACK GROUND COLOR GEN 1
11pin/EX-20
BF
9.0V
FROM CH-7, 1-12
11 BF IN
( ) : "BACK GROUND COLOR" MAX
(( )) : "BACK GROUND COLOR" MIN
RV6: CARR. BAL 1
FROM EF10, 7-41
12 BURST GATE PULSE OUT
22 CM COLOR LEVEL(2) IN
16 CM COLOR LEVEL(1) IN
RV1: BURST LEVEL 2
RV2: BURST LEVEL 1
BACK GROUND COLOR (FRONT PANEL)
20 CM COLOR DC(2) OUT
18 CM COLOR DC(1) OUT
Q2 2SC2603 SC AMP
Q3 2SC2603 SC 90° SHIFTER
Q4 2SA1175 SC BUFF.
Q6 2SA1175 INV.
Q8 2SC2603
IC7 CX120 SC 180° SHIFTER
Q7 2SC2603
Q11 2SA1175 DC BUFF.
Q12 2SA1175 DC BUFF.
Q18 2SC1963 MIX AMP
Q19 2SC1963 DC BAL
IC9 MC1496P BACK GROUND COLOR GEN 2
FROM CH-7, 1-20
26 SC (X) IN
FROM CH-7, 1-22
24 SC (G) IN
FROM CH-7, 1-18
9 L ALT IN (EXCEPT HSC)
L1: SC 90°
IC10-1,8pin BACK GROUND PULSE(2)
0.1V
Note; BACK GROUND COLOR "GREEN" position
IC11-7,14pin BACK GROUND PULSE(1)
0.1V
RV7: CARR BAL 2
Q20, Q36-B BACK GROUND CHROMA

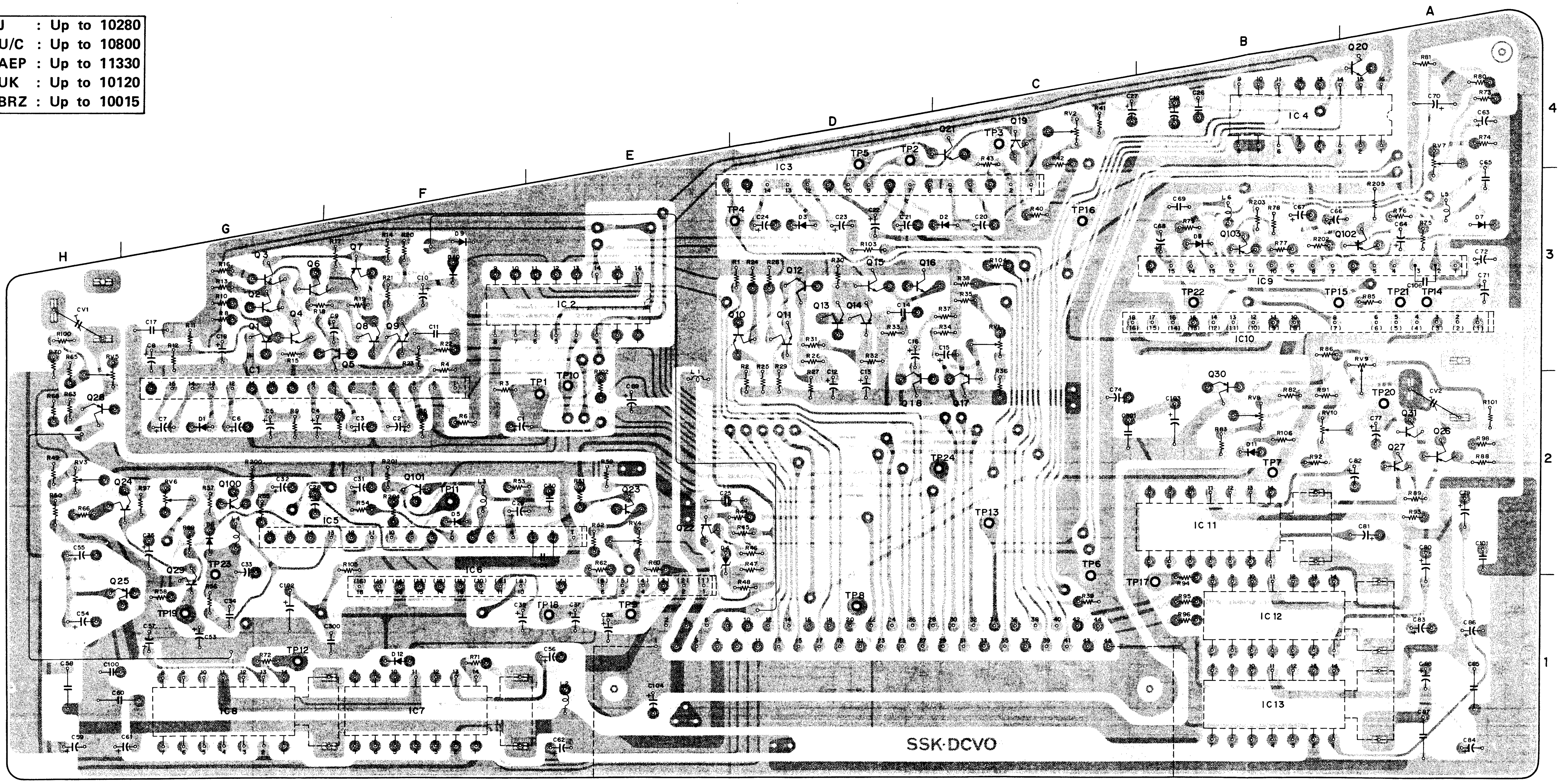

Q31-Corrector
0.55
Note; PST VIDEO(1)SELECT
9.0V
TP11,TP12
BLACK BURST
290mV
300mV
IC1 SN74LS26N SYNC INV.
IC3 TC4069UBP SYNC PHASE & LEVEL SET
Q32 2SC2603
Q31 2SC2603 INV
Q33 2SC2603 Q34 2SC2603 REF. BLACK LEVEL SET
Q46 2SC2603 BUFF
Q35 2SA1175 BUFF
Q41 2SD789 +5V REG
Q42 2SC2603 Q43 2SC2603 Q44 2SC2603 Q45 2SC2603 REF. BLACK (1~4) DRIVER
TP3
TP13
TP12
TP11
+5V OUT
TO SD-2, 2-5.6 CH-7, 1-5.6 SC PHASE & H.PHASE (REAR PANEL)
BLACK BURST (4)(X) OUT 39
BLACK BURST (3)(X) OUT 41
BLACK BURST (2)(X) OUT 43
BLACK BURST (1)(X) OUT 45
BLACK BURST (G) OUT 37
BLACK BURST (X) OUT 35
BLACK BURST (G) OUT 33
TO EF-10, 7-7
TO EF-10, 7-8
CN005 CN004 CN003 CN002
BLACK BURST OUT (BNC, REAR PANEL)
RV3: SYNC PHASE
RV12: SYNC LEVEL
RV13: REF. BLACK LEVEL
RV15: +5V REG. ADJ
Q13 2SC2603 BUFF
Q14 2SA1175 BUFF
BACK GROUND BLKG PULSE GEN.
Q26 2SA1175 BUFF.
Q25 2SC2603 WHITE LEVEL SET.
Q27 2SC2603 BUFF
Q28 2SC2603
Q48 2SC2603
Q30 2SC2603 REF. BURST GEN
IC12 CA3054
Q29 2SC2603
BLKG PHASE SET
Q47 2SC2603 BUFF
Q10,Q49 2SC2603 BACK GROUND LUM CONT
Q24 2SC2603 BUFF
TP7 BLKG
9.0V
TP9
LUM (+9V) OUT 32
LUM LEVEL CONT IN 30
LUM (GND) OUT 28
LUM (FRONT PANEL)
BLKG OUT 31
TO EF-8, 7-17
RV9: WHITE Y LEVEL
RV16: DC BAL.
RV11: BLACK LEVEL
RV4: BLKG PHASE
RV5: LUM LEVEL
Q15 2SA1175
IC10 CA3054 BACK GROUND PULSE GEN 2
IC11 CA3054 BACK GROUND PULSE GEN 1
※3 D6 1S2473VE
Q16 2SC1963 MIX AMP
Q17 2SC1963 DC BAL
IC8 MC1496P BACK GROUND COLOR GEN 1
Q20,Q21 2SC2603 Y/C MIX & LEVEL SET
Q22 2SC2603 BACK GROUND PHASE SET
Q23 2SA1175 BACK GROUND AMP
TP4
TP6 BACK GROUND COLOR
0.90Vp-p
Note; BACK GROUND COLOR; BLUE position
BACK GROUND (X) OUT 38
TO EF-8, 5-20
BACK GROUND (G) OUT 36
TO EF-8, 5-19
( ) : "BACK GROUND COLOR" MAX
[ ] : "BACK GROUND COLOR" MIN
RV6: CARR. BAL 1
RV8: BACK GROUND CHROMA LEVEL
L2: BACK GROUND PHASE
Q8 2SC2603
IC7 CX120 SC 180° SHIFTER
Q7 2SC2603
Q11 2SA1175 DC BUFF.
Q12 2SA1175 DC BUFF.
Q18 2SC1963 MIX AMP
Q19 2SC1963 DC BAL
IC9 MC1496P BACK GROUND COLOR GEN 2
Q36 2SA1175 CHROMA LEVEL SET
Q37 2SC2603 Q38 Y/C MIX
Q39 2SA844 BORDER PHASE SET
Q40 2SA1175 BORDER AMP
TP10 BORDER
0.36Vp-p
Note; BACK GROUND COLOR; BLUE position
TP10
CM BORDER (X) OUT 44
TO EF-9, 6-45
CM BORDER (G) OUT 42
TO EF-9, 6-44
IC10-1,8pin BACK GROUND PULSE(2)
IC11-7,14 pin BACK GROUND PULSE(1)
Note; BACK GROUND COLOR "GREEN" position
0.1V
RV7: CARR. BAL 2
Q20,Q36-B BACK GROUND CHROMA
0~1.4V (by ROTALY)
RV14: BORDER CHROMA LEVEL
L4,L5: BORDER PHASE

NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C87 10P ADD	(AEP) 11991~ (UK) 10151~ (BRZ) 10036~
※2	R28,38 3K → 3300 R48,49 2400 → 2700 R155 7500 → 6800	(AEP) 12821~ (UK) 10191~ (BRZ) 10046~
※3	D6 1S1555 → 1S2473VE	(AEP) 11331~ (UK) 10121~ (BRZ) 10016~

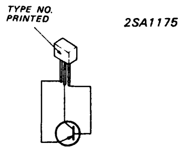
DK-4 BOARD

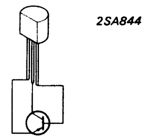
Serial No.		
J	:	Up to 10280
U/C	:	Up to 10800
AEP	:	Up to 11330
UK	:	Up to 10120
BRZ	:	Up to 10015

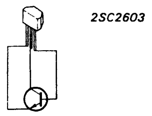

A
B
C
D
E
F
G
H
4
3
2
1
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
TP24
CV1
CV2
SSK·DCVO

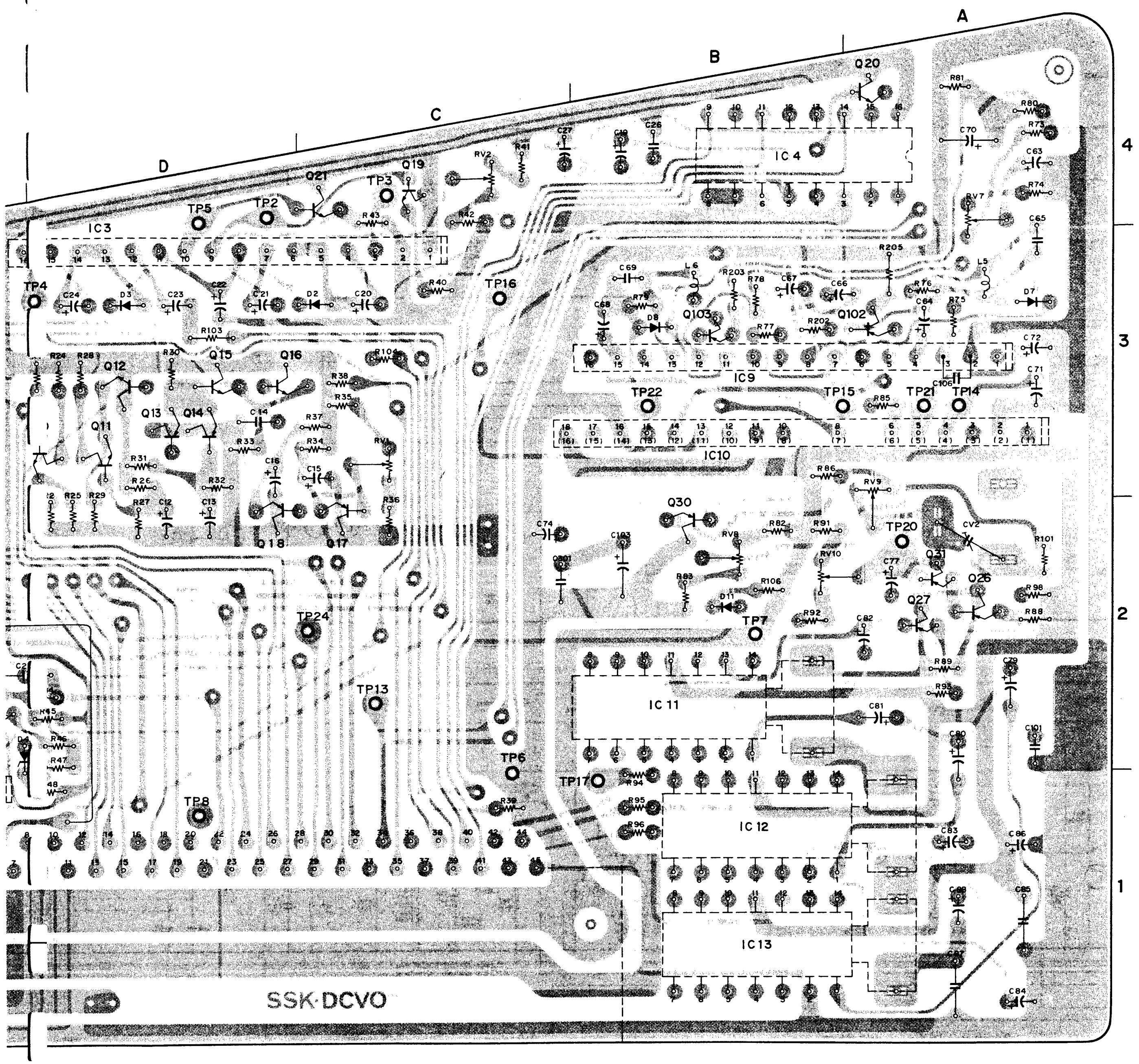
CV1	H - 3	TP1
CV2	A - 2	TP2
		TP3
D1	G - 2	TP4
D2	C - 3	TP5
D3	D - 3	TP6
D4	D - 2	TP7
D5	F - 2	TP8
D6	G - 2	TP9
D7	A - 3	TP10
D8	B - 3	TP11
D9	F - 3	TP12
D10	F - 3	TP13
D11	B - 2	TP14
D12	F - 1	TP15
		TP16
IC1	F - 2	TP17
IC2	E - 3	TP18
IC3	D - 3	TP19
IC4	B - 4	TP20
IC5	F - 2	TP21
IC6	F - 1	TP22
IC7	F - 1	TP23
IC8	G - 1	TP24
IC9	B - 3	
IC10	B - 3	
IC11	B - 2	
IC12	B - 1	
IC13	B - 1	
Q1	G - 3	
Q2	G - 3	
Q3	G - 3	
Q4	G - 3	
Q5	F - 3	
Q6	G - 3	
Q7	F - 3	
Q8	F - 3	
Q9	F - 3	
Q10	D - 3	
Q11	D - 3	
Q12	D - 3	
Q13	D - 3	
Q14	D - 3	
Q15	D - 3	
Q16	D - 3	
Q17	C - 2	
Q18	D - 2	
Q19	C - 4	
Q21	C - 4	
Q22	E - 2	
Q23	E - 2	
Q24	G - 2	
Q25	G - 1	
Q26	A - 2	
Q27	A - 2	
Q28	H - 2	
Q29	G - 1	
Q30	B - 2	
Q31	A - 2	
Q100	G - 2	
Q101	F - 2	
Q102	A - 3	
RV1	C - 3	
RV2	C - 2	
RV3	H - 2	
RV4	E - 2	
RV5	H - 2	
RV6	G - 2	
RV7	A - 3	
RV8	B - 2	
RV9	A - 2	
RV10	B - 2	

DK-4 BOARD-11
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM


TYPE NO. PRINTED
2SA1175



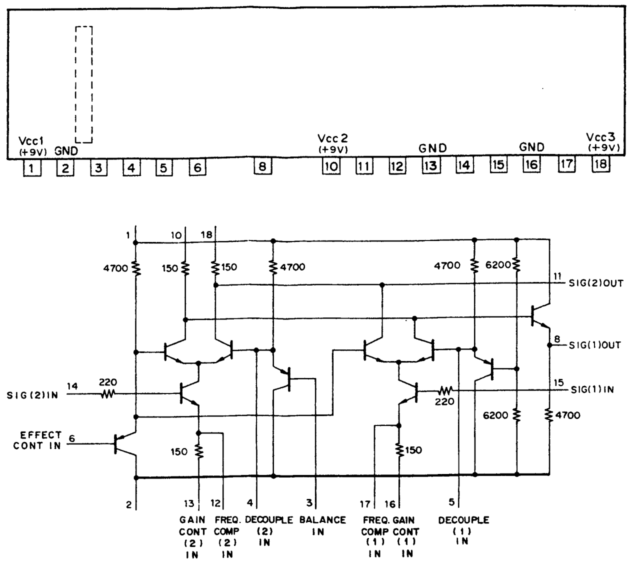



A
B
C
D
4
3
2
1
IC3
IC4
IC9
IC10
IC11
IC12
IC13
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP13
TP14
TP15
TP16
TP17
TP20
TP21
TP22
TP24
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q26
Q27
Q30
Q31
Q102
Q103
RV2
RV7
RV8
RV9
RV10
CV2
SSK·DCVO

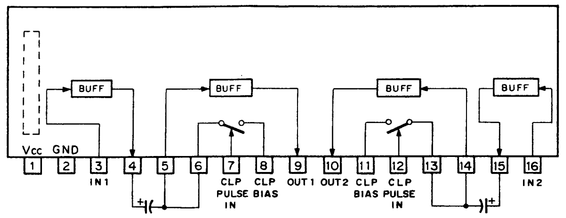
DK-4 BOARD-11
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

CV1	H-3	TP1	E-2
CV2	A-2	TP2	D-3
		TP3	C-4
D1	G-2	TP4	D-3
D2	C-3	TP5	D-3
D3	D-3	TP6	C-1
D4	D-2	TP7	B-2
D5	F-2	TP8	D-1
D6	G-2	TP9	E-1
D7	A-3	TP10	E-2
D8	B-3	TP11	F-2
D9	F-3	TP12	G-1
D10	F-3	TP13	C-2
D11	B-2	TP14	A-3
D12	F-1	TP15	A-3
		TP16	C-3
IC1	F-2	TP17	B-1
IC2	E-3	TP18	E-1
IC3	D-3	TP19	G-1
IC4	B-4	TP20	A-2
IC5	F-2	TP21	A-3
IC6	F-1	TP22	B-3
IC7	F-1	TP23	G-1
IC8	G-1	TP24	C-2
IC9	B-3		
IC10	B-3		
IC11	B-2		
IC12	B-1		
IC13	B-1		
Q1	G-3		
Q2	G-3		
Q3	G-3		
Q4	G-3		
Q5	F-3		
Q6	G-3		
Q7	F-3		
Q8	F-3		
Q9	F-3		
Q10	D-3		
Q11	D-3		
Q12	D-3		
Q13	D-3		
Q14	D-3		
Q15	D-3		
Q16	D-3		
Q17	C-2		
Q18	D-2		
Q19	C-4		
Q21	C-4		
Q22	E-2		
Q23	E-2		
Q24	G-2		
Q25	G-1		
Q26	A-2		
Q27	A-2		
Q28	H-2		
Q29	G-1		
Q30	B-2		
Q31	A-2		
Q100	G-2		
Q101	F-2		
Q102	A-3		
RV1	C-3		
RV2	C-2		
RV3	H-2		
RV4	E-2		
RV5	H-2		
RV6	G-2		
RV7	A-3		
RV8	B-2		
RV9	A-2		
RV10	B-2		

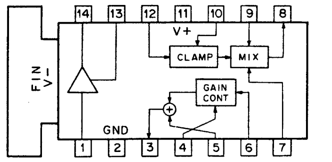
BX3991 (SONY)
FADER EFFECT AMPLIFIER
— REAR VIEW —


Vcc1 (+9V)
GND
Vcc 2 (+9V)
GND
GND
Vcc3 (+9V)
1
2
3
4
5
6
8
10
11
12
13
14
15
16
17
18
4700
150
150
4700
4700
6200
SIG(2)OUT
SIG(1)OUT
SIG(1)IN
SIG(2)IN
220
220
EFFECT CONT IN
150
150
6200
4700
GAIN CONT (2) IN
FREQ. COMP (2) IN
DECOUPLE (2) IN
BALANCE IN
FREQ. COMP (1) IN
GAIN CONT (1) IN
DECOUPLE (1) IN

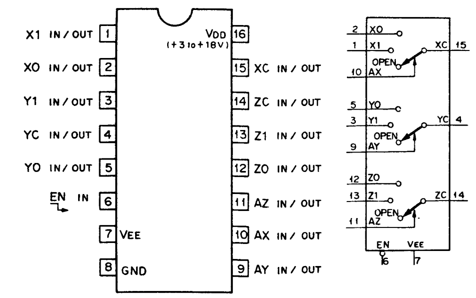
BX3992 (SONY)
DUAL CLAMPER
— REAR VIEW —


BUFF
BUFF
BUFF
BUFF
Vcc
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
IN1
CLP PULSE IN
CLP BIAS
OUT1
OUT2
CLP BIAS
CLP PULSE IN
IN2

CX 814 (SONY)
—TOP VIEW—


14
13
12
11
10
9
8
V+
CLAMP
MIX
FIN V-
GAIN CONT
GND
1
2
3
4
5
6
7

CD4053BE (RCA)
HD14053BP (HITACHI)
MB84053B (FUJITSU)
MC14053BCP (MOTOROLA)
MSM4053 (OKI)
TC4053BF (TOSHIBA) FLAT PACKAGE
TC4053BP (TOSHIBA)
uPD4053BC (NEC)
C-MOS 2-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —


X1 IN/OUT 1
XO IN/OUT 2
Y1 IN/OUT 3
YC IN/OUT 4
YO IN/OUT 5
EN IN 6
7 VEE
8 GND
VDD 16 (+3 to +18V)
15 XC IN/OUT
14 ZC IN/OUT
13 Z1 IN/OUT
12 ZO IN/OUT
11 AZ IN/OUT
10 AX IN/OUT
9 AY IN/OUT
2 XO
1 X1
XC 15
OPEN
10 AX
5 YO
3 Y1
YC 4
OPEN
9 AY
12 ZO
13 Z1
ZC 14
OPEN
11 AZ
EN 6
VEE 7

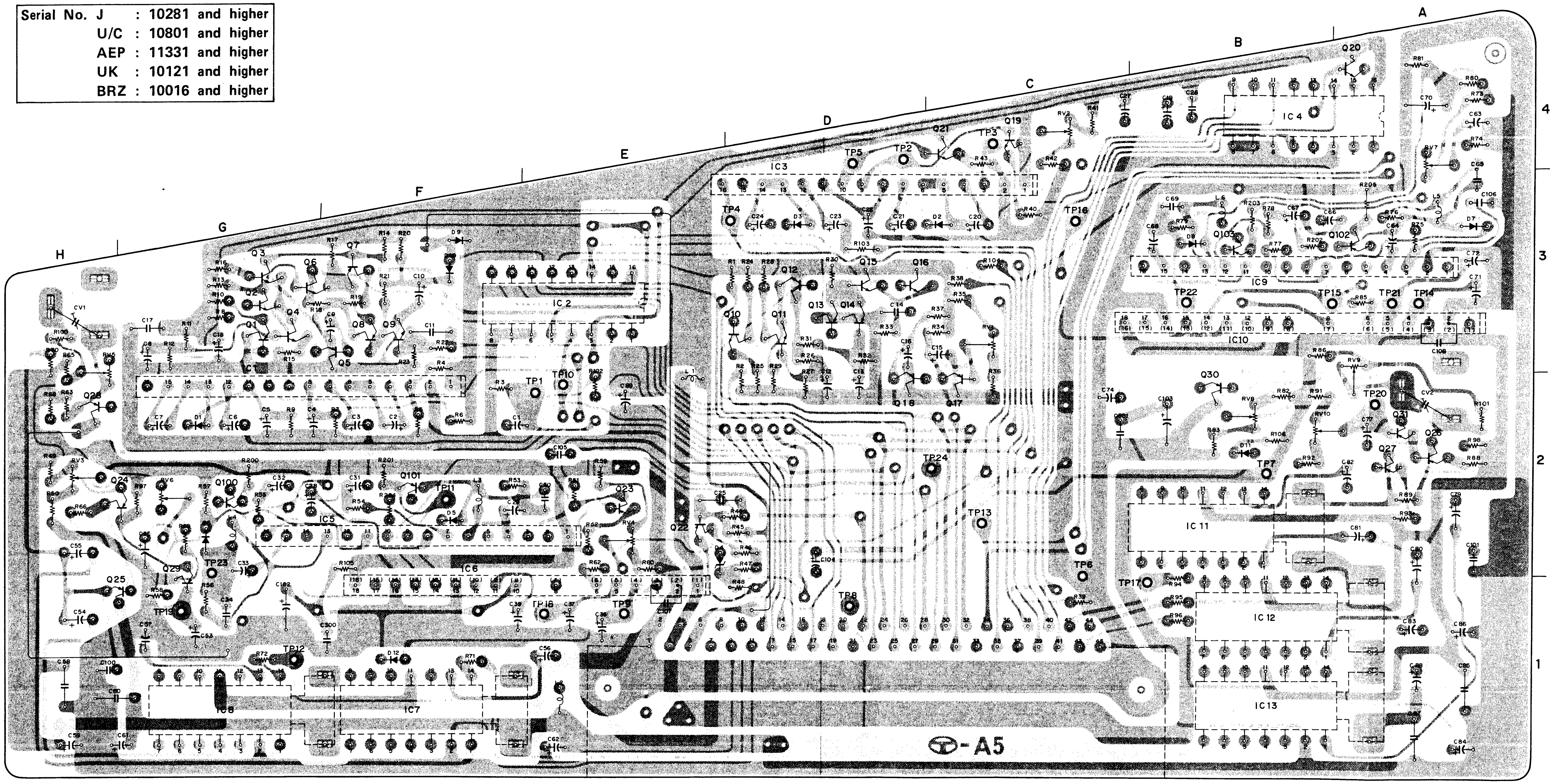
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z,)	
0	0	0
0	1	1
1	X	OPEN

DK-4 BOARD

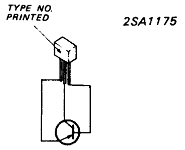
– SOLDERING SIDE –

Serial No. J : 10281 and higher
U/C : 10801 and higher
AEP : 11331 and higher
UK : 10121 and higher
BRZ : 10016 and higher

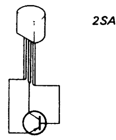

A
B
C
D
E
F
G
H
1
2
3
4
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
TP24
Q20
Q21
Q19
Q30
Q31
Q102
Q103
Q100
Q101
CV1
CV2
A5

CV1	H - 3
CV2	A - 2
D1	G - 2
D2	C - 3
D3	D - 3
D4	D - 2
D5	F - 2
D6	G - 2
D7	A - 3
D8	B - 3
D9	F - 3
D10	F - 3
D11	B - 2
D12	F - 1
IC1	F - 2
IC2	E - 3
IC3	D - 3
IC4	B - 4
IC5	F - 2
IC6	F - 1
IC7	F - 1
IC8	G - 1
IC9	B - 3
IC10	B - 3
IC11	B - 2
IC12	B - 1
IC13	B - 1
Q1	G - 3
Q2	G - 3
Q3	G - 3
Q4	G - 3
Q5	F - 3
Q6	G - 3
Q7	F - 3
Q8	F - 3
Q9	F - 3
Q10	D - 3
Q11	D - 3
Q12	D - 3
Q13	D - 3
Q14	D - 3
Q15	D - 3
Q16	D - 3
Q17	C - 2
Q18	D - 2
Q19	C - 4
Q21	C - 4
Q22	E - 2
Q23	E - 2
Q24	G - 2
Q25	G - 1
Q26	A - 2
Q27	A - 2
Q28	H - 2
Q29	G - 1
Q30	B - 2
Q31	A - 2
Q100	G - 2
Q101	F - 2
Q102	A - 3
RV1	C - 3
RV2	C - 2
RV3	H - 2
RV4	E - 2
RV5	H - 2
RV6	G - 2
RV7	A - 3
RV8	B - 2
RV9	A - 2
RV10	B - 2
TP1	E - 2
TP2	D - 3
TP3	C - 4
TP4	D - 3
TP5	D - 3
TP6	C - 1
TP7	B - 2
TP8	D - 1
TP9	E - 1
TP10	E - 2
TP11	F - 2
TP12	G - 1
TP13	C - 2
TP14	A - 3
TP15	A - 3
TP16	C - 3
TP17	B - 1
TP18	E - 1
TP19	G - 1
TP20	A - 2
TP21	A - 3
TP22	B - 3
TP23	G - 1
TP24	C - 2

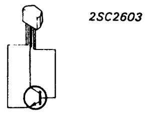
DK-4 BOARD – 12
– SOLDERING SIDE –
SEG – 2000 A
SEG – 2000 AP
SEG – 2000 APM


TYPE NO. PRINTED

2SA1175

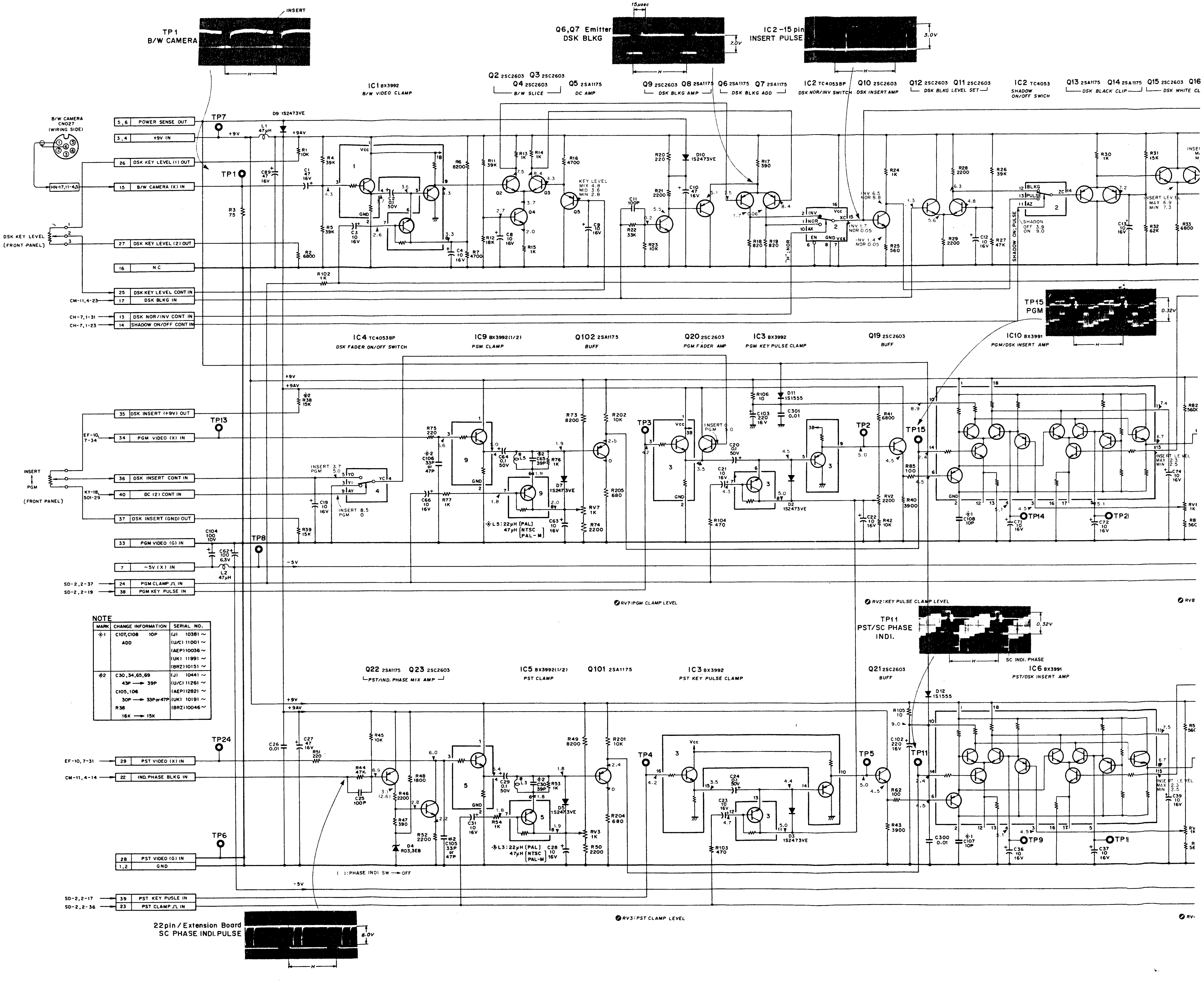


2SA844



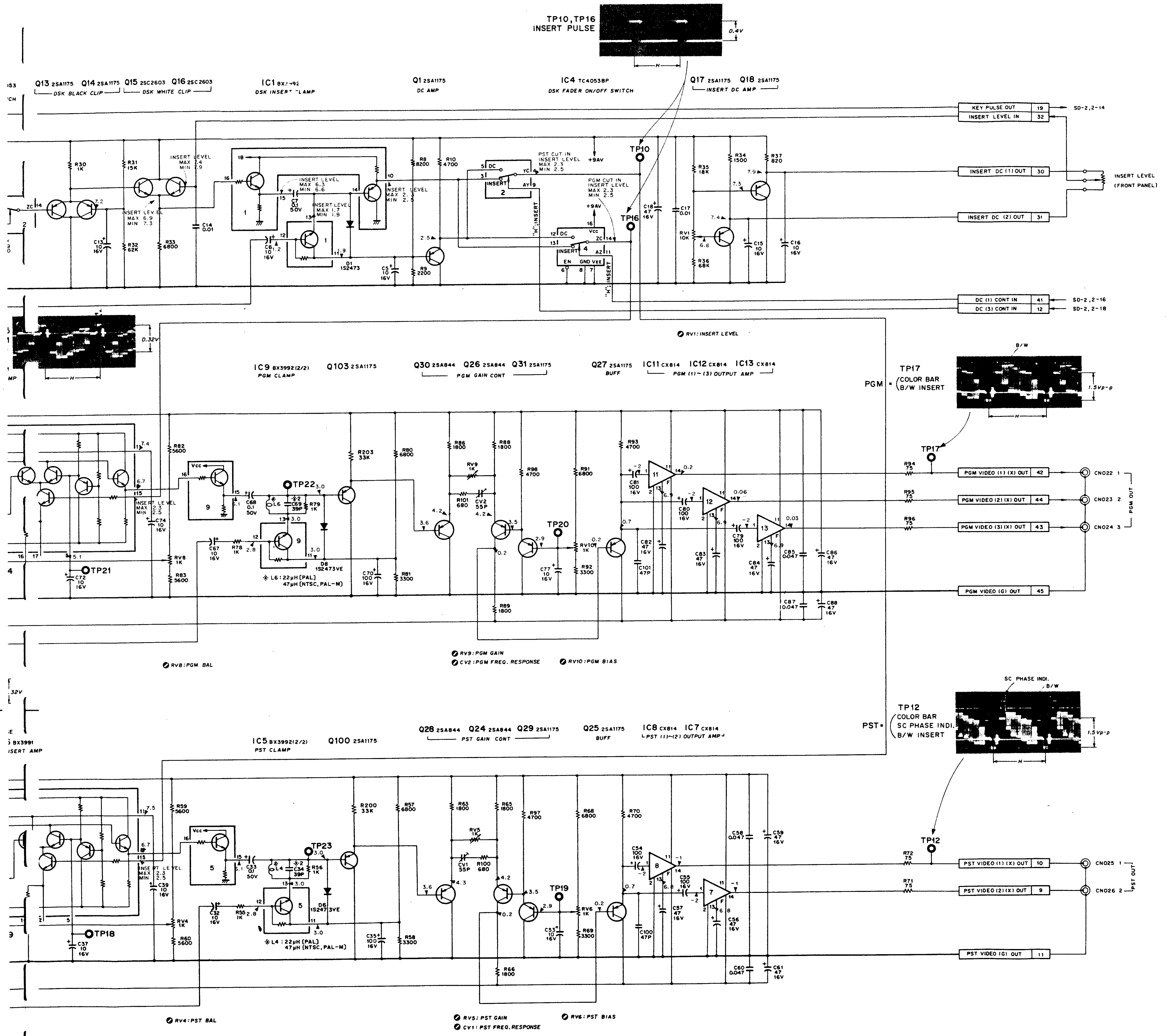
2SC2603

DK-4 BOARD (DOWNSTREAM KEYER SYSTEM)


TP1
B/W CAMERA
INSERT
Q6,Q7 Emitter
DSK BLKG
15μsec
7.0V
IC2-15 pin
INSERT PULSE
3.0V
IC1 BX3992
B/W VIDEO CLAMP
Q2 2SC2603 Q3 2SC2603
Q4 2SC2603
B/W SLICE
Q5 2SA1175
DC AMP
Q9 2SC2603 Q8 2SA1175
DSK BLKG AMP
Q6 2SA1175 Q7 2SA1175
DSK BLKG ADD
IC2 TC4053BP
DSK NOR/INV SWITCH
Q10 2SC2603
DSK INSERT AMP
Q12 2SC2603 Q11 2SC2603
DSK BLKG LEVEL SET
IC2 TC4053
SHADOW ON/OFF SWICH
Q13 2SA1175 Q14 2SA1175
DSK BLACK CLIP
Q15 2SC2603 Q16
DSK WHITE CL
B/W CAMERA
CN027
(WIRING SIDE)
HN-17,11-4,5
DSK KEY LEVEL
(FRONT PANEL)
5,6 POWER SENSE OUT
3,4 +9V IN
26 DSK KEY LEVEL (1) OUT
15 B/W CAMERA (X) IN
27 DSK KEY LEVEL (2) OUT
16 NC
25 DSK KEY LEVEL CONT IN
17 DSK BLKG IN
13 DSK NOR/INV CONT IN
14 SHADOW ON/OFF CONT IN
CM-11,4-23
CH-7,1-31
CH-7,1-23
TP7
TP15
PGM
0.32V
IC4 TC4053BP
DSK FADER ON/OFF SWITCH
IC9 BX3992(1/2)
PGM CLAMP
Q102 2SA1175
BUFF
Q20 2SC2603
PGM FADER AMP
IC3 BX3992
PGM KEY PULSE CLAMP
Q19 2SC2603
BUFF
IC10 BX3991
PGM/DSK INSERT AMP
35 DSK INSERT (+9V) OUT
34 PGM VIDEO (X) IN
36 DSK INSERT CONT IN
40 DC (2) CONT IN
37 DSK INSERT (GND) OUT
33 PGM VIDEO (G) IN
7 −5V (X) IN
24 PGM CLAMP ⎍ IN
38 PGM KEY PULSE IN
EF-10, 7-34
INSERT
PGM
(FRONT PANEL)
KY-18, 501-29
SD-2,2-37
SD-2,2-19
TP13
TP8
TP3
TP2
TP14
TP21
RV7:PGM CLAMP LEVEL
RV2:KEY PULSE CLAMP LEVEL
TP11
PST/SC PHASE INDI.
0.32V
SC INDI. PHASE
Q22 2SA1175 Q23 2SC2603
PST/IND. PHASE MIX AMP
IC5 BX3992(1/2)
PST CLAMP
Q101 2SA1175
IC3 BX3992
PST KEY PULSE CLAMP
Q21 2SC2603
BUFF
IC6 BX3991
PST/DSK INSERT AMP
TP24
29 PST VIDEO (X) IN
22 IND. PHASE BLKG IN
EF-10, 7-31
CM-11, 4-14
TP6
28 PST VIDEO (G) IN
1,2 GND
39 PST KEY PUSLE IN
23 PST CLAMP ⎍ IN
SD-2,2-17
SD-2,2-36
TP4
TP5
TP9
TP11
RV3:PST CLAMP LEVEL
[ ]:PHASE INDI SW → OFF
22pin / Extension Board
SC PHASE INDI. PULSE
6.0V

NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C107,C108 10P ADD	(J) 10381 ~ (U/C) 11001 ~ (AEP) 10036 ~ (UK) 11991 ~ (BRZ) 10151 ~
※2	C30,34,65,69 43P → 39P C105,106 30P → 33P or 47P R38 16K → 15K	(J) 10441 ~ (U/C) 11261 ~ (AEP) 12821 ~ (UK) 10191 ~ (BRZ) 10046 ~


TP10, TP16
INSERT PULSE
0.4V
H
Q13 2SA1175 Q14 2SA1175 Q15 2SC2603 Q16 2SC2603
DSK BLACK CLIP
DSK WHITE CLIP
IC1
DSK INSERT LAMP
Q1 2SA1175
DC AMP
IC4 TC4053BP
DSK FADER ON/OFF SWITCH
Q17 2SA1175 Q18 2SA1175
INSERT DC AMP
KEY PULSE OUT 19
INSERT LEVEL IN 32
SD-2, 2-14
INSERT DC (1) OUT 30
INSERT DC (2) OUT 31
INSERT LEVEL (FRONT PANEL)
TP10
TP16
PST CUT IN INSERT LEVEL MAX 2.3 MIN 2.5
PGM CUT IN INSERT LEVEL MAX 2.3 MIN 2.5
+9AV
DC (1) CONT IN 41
DC (3) CONT IN 12
SD-2, 2-16
SD-2, 2-18
RV1: INSERT LEVEL
0.32V
IC9 BX3992(2/2)
PGM CLAMP
Q103 2SA1175
Q30 2SA844 Q26 2SA844 Q31 2SA1175
PGM GAIN CONT
Q27 2SA1175
BUFF
IC11 CX814 IC12 CX814 IC13 CX814
PGM (1)~(3) OUTPUT AMP
TP17
PGM = (COLOR BAR B/W INSERT
B/W
1.5Vp-p
TP22
TP20
TP21
L6: 22μH (PAL) 47μH (NTSC, PAL-M)
PGM VIDEO (1) (X) OUT 42
PGM VIDEO (2) (X) OUT 44
PGM VIDEO (3) (X) OUT 43
PGM VIDEO (G) OUT 45
CN022 1
CN023 2
CN024 3
PGM OUT
RV8: PGM BAL
RV9: PGM GAIN
CV2: PGM FREQ. RESPONSE
RV10: PGM BIAS
TP12
PST = (COLOR BAR SC PHASE INDI. B/W INSERT
SC PHASE INDI.
IC5 BX3992(2/2)
PST CLAMP
Q100 2SA1175
Q28 2SA844 Q24 2SA844 Q29 2SA1175
PST GAIN CONT
Q25 2SA1175
BUFF
IC8 CX814 IC7 CX814
PST (1)~(2) OUTPUT AMP
TP23
TP19
TP18
L4: 22μH (PAL) 47μH (NTSC, PAL-M)
PST VIDEO (1) (X) OUT 10
PST VIDEO (2) (X) OUT 9
PST VIDEO (G) OUT 11
CN025 1
CN026 2
PST OUT
RV4: PST BAL
RV5: PST GAIN
CV1: PST FREQ. RESPONSE
RV6: PST BIAS

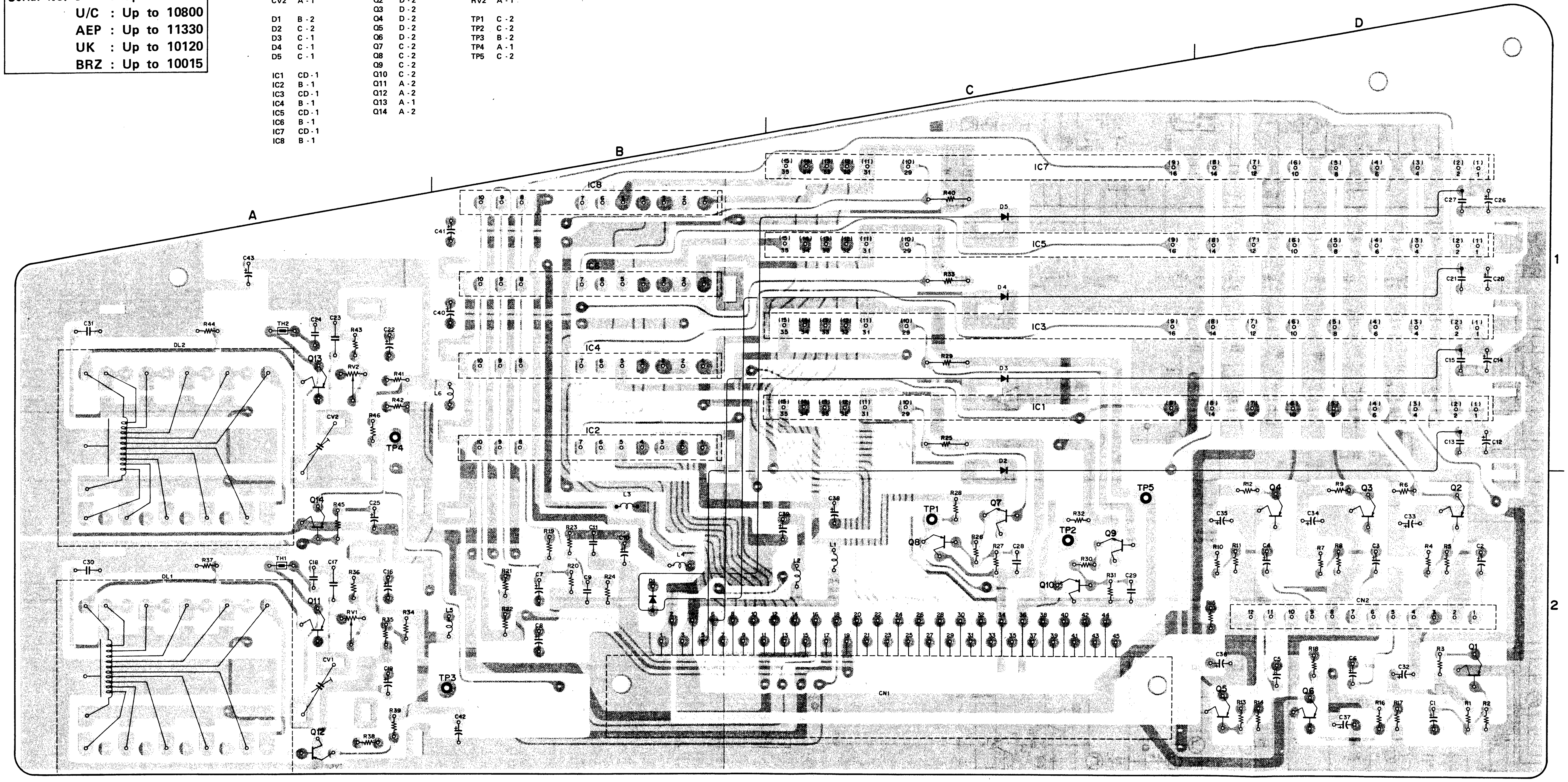
NOTE:

1. All voltage are measured with a digital voltmeter (input inpedance 10MΩ).
2. Waveform photographs are taken under the following conditions:
   - Color bar signal (1 Vp-p) input to "VIDEO IN"
   - NORMAL/INVERT ; NORMAL
   - PHASE INDICATION ; ON
   - INSERT ; CUT IN
   - SHADOW ; OFF

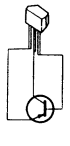
EF-8 BOARD
– SOLDERING SIDE –

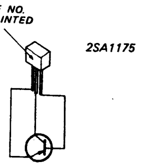
Serial No.	J	: Up to 10280
	U/C	: Up to 10800
	AEP	: Up to 11330
	UK	: Up to 10120
	BRZ	: Up to 10015

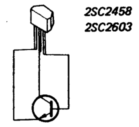
CV1	A - 2
CV2	A - 1
D1	B - 2
D2	C - 2
D3	C - 1
D4	C - 1
D5	C - 1
IC1	CD - 1
IC2	B - 1
IC3	CD - 1
IC4	B - 1
IC5	CD - 1
IC6	B - 1
IC7	CD - 1
IC8	B - 1
Q1	D - 2
Q2	D - 2
Q3	D - 2
Q4	D - 2
Q5	D - 2
Q6	D - 2
Q7	C - 2
Q8	C - 2
Q9	C - 2
Q10	C - 2
Q11	A - 2
Q12	A - 2
Q13	A - 1
Q14	A - 2
RV1	A - 2
RV2	A - 1
TP1	C - 2
TP2	C - 2
TP3	B - 2
TP4	A - 1
TP5	C - 2

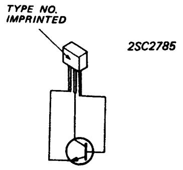

A
B
C
D
1
2
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
CN1
CN2
DL1
DL2
TH1
TH2
CV1
CV2
RV1
RV2
TP1
TP2
TP3
TP4
TP5
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
D1
D2
D3
D4
D5
L1
L2
L3
L4
L5
L6

EF-8 BOARD
1-606-074-13
SEG-2000
SEG-2000P
SEG-2000PM
SEG-2000A
SEG-2000AP
SEG-2000APM

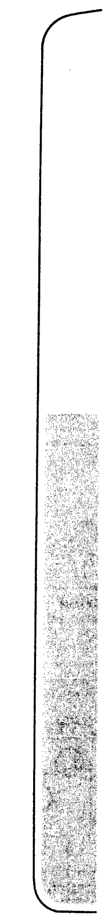

2SA1048
2SA1115

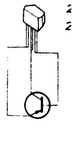

TYPE NO.
IMPRINTED
2SA1175

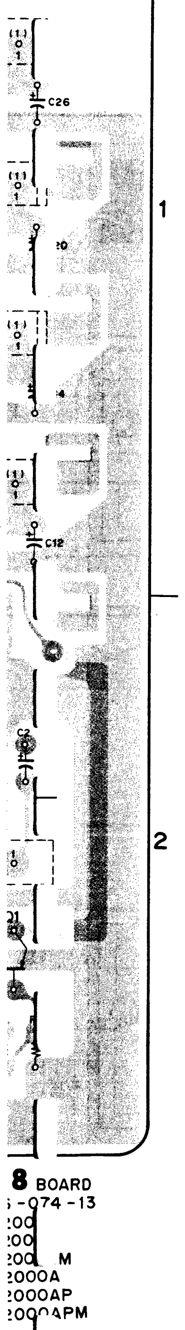

2SC2458
2SC2603


TYPE NO.
IMPRINTED
2SC2785

EF-9 BOA
– SOLDE
Serial Nc







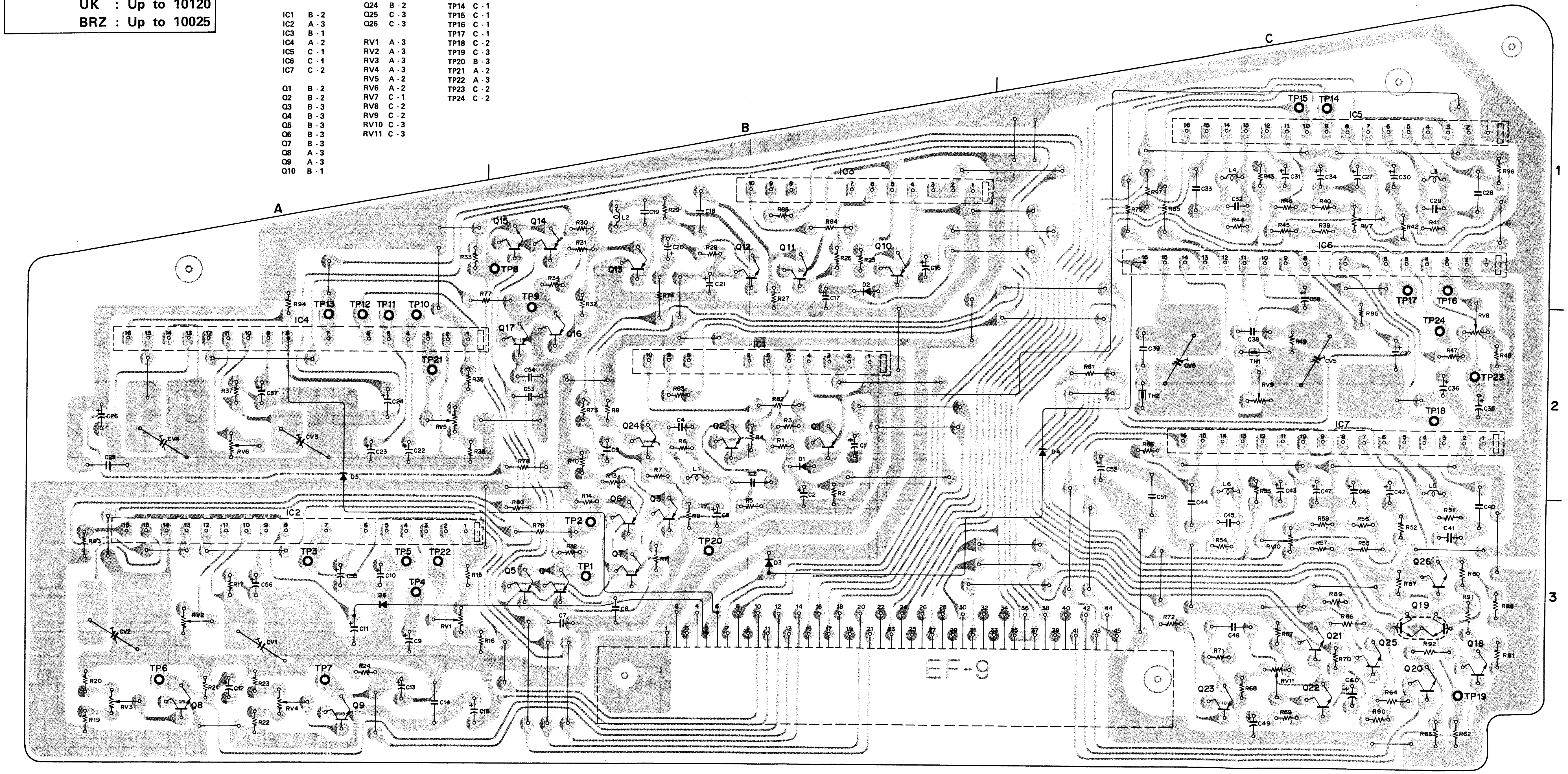
8 BOARD
-074-13
200
200
200 M
2000A
2000AP
2000APM

EF-9 BOARD

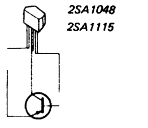
– SOLDERING SIDE –

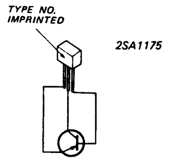
Serial No.	J	:	Up to 10280
	U/C	:	Up to 10800
	AEP	:	Up to 11470
	UK	:	Up to 10120
	BRZ	:	Up to 10025

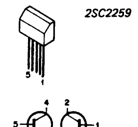
CV1	A - 3
CV2	A - 3
CV3	A - 2
CV4	A - 2
CV5	C - 2
CV6	C - 2
D1	B - 2
D2	B - 1
D3	B - 3
D4	C - 2
D5	A - 2
D6	A - 3
IC1	B - 2
IC2	A - 3
IC3	B - 1
IC4	A - 2
IC5	C - 1
IC6	C - 1
IC7	C - 2
Q1	B - 2
Q2	B - 2
Q3	B - 3
Q4	B - 3
Q5	B - 3
Q6	B - 3
Q7	B - 3
Q8	A - 3
Q9	A - 3
Q10	B - 1
Q11	B - 1
Q12	B - 1
Q13	B - 1
Q14	B - 1
Q15	B - 1
Q16	B - 2
Q17	B - 2
Q18	C - 3
Q19	C - 3
Q20	C - 3
Q21	C - 3
Q22	C - 3
Q23	C - 3
Q24	B - 2
Q25	C - 3
Q26	C - 3
RV1	A - 3
RV2	A - 3
RV3	A - 3
RV4	A - 3
RV5	A - 2
RV6	A - 2
RV7	C - 1
RV8	C - 2
RV9	C - 2
RV10	C - 3
RV11	C - 3
TP1	B - 3
TP2	B - 3
TP3	A - 3
TP4	A - 3
TP5	A - 3
TP6	A - 3
TP7	A - 3
TP8	B - 1
TP9	B - 2
TP10	A - 2
TP11	A - 2
TP12	A - 2
TP13	A - 2
TP14	C - 1
TP15	C - 1
TP16	C - 1
TP17	C - 1
TP18	C - 2
TP19	C - 3
TP20	B - 3
TP21	A - 2
TP22	A - 3
TP23	C - 2
TP24	C - 2

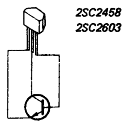

A
B
C
1
2
3
IC1
IC2
IC3
IC4
IC5
IC6
IC7
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
TP24
EF-9

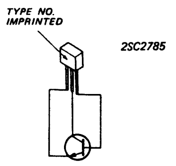
EF-9 BOARD
1-606-075-12
SEG-2000/2000A
SEG-2000P/2000AP
SEG-2000PM/2000APM


2SA1048
2SA1115


TYPE NO. IMPRINTED
2SA1175


2SC2259
5
1
4
2
5
1
3


2SC2458
2SC2603

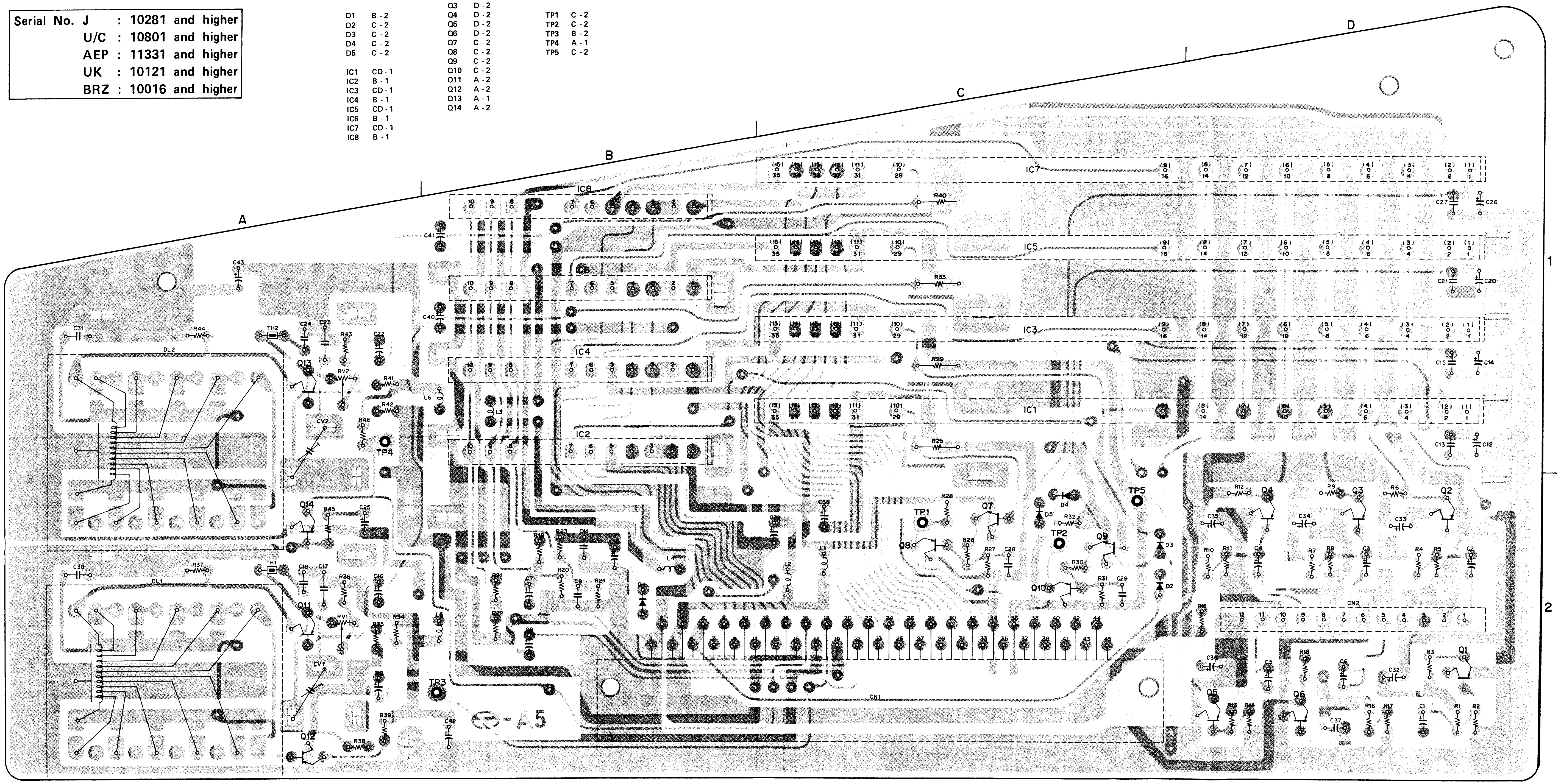

TYPE NO. IMPRINTED
2SC2785

EF-8 BOARD

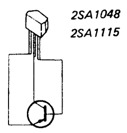
– SOLDERING SIDE –

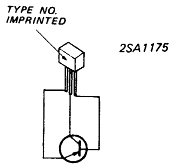
Serial No. J	:	10281	and higher
U/C	:	10801	and higher
AEP	:	11331	and higher
UK	:	10121	and higher
BRZ	:	10016	and higher

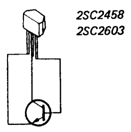
CV1	A - 2	Q1	D - 2	RV1	A - 2
CV2	A - 1	Q2	D - 2	RV2	A - 1
		Q3	D - 2		
D1	B - 2	Q4	D - 2	TP1	C - 2
D2	C - 2	Q5	D - 2	TP2	C - 2
D3	C - 2	Q6	D - 2	TP3	B - 2
D4	C - 2	Q7	C - 2	TP4	A - 1
D5	C - 2	Q8	C - 2	TP5	C - 2
		Q9	C - 2		
IC1	CD - 1	Q10	C - 2		
IC2	B - 1	Q11	A - 2		
IC3	CD - 1	Q12	A - 2		
IC4	B - 1	Q13	A - 1		
IC5	CD - 1	Q14	A - 2		
IC6	B - 1				
IC7	CD - 1				
IC8	B - 1				

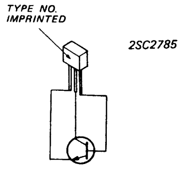

A
B
C
D
1
2
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
DL1
DL2
CN1
CN2
TP1
TP2
TP3
TP4
TP5
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
CV1
CV2
RV1
RV2
TH1
TH2
L3
L4
L6
D1
D2
D3
D4
D5
A5

EF - 8 BOARD
1-606-074-14
SEG-2000
SEG-2000P
SEG-2000PM
SEG-2000A
SEG-2000AP
SEG-2000APM


2SA1048
2SA1115


TYPE NO. IMPRINTED
2SA1175


2SC2458
2SC2603

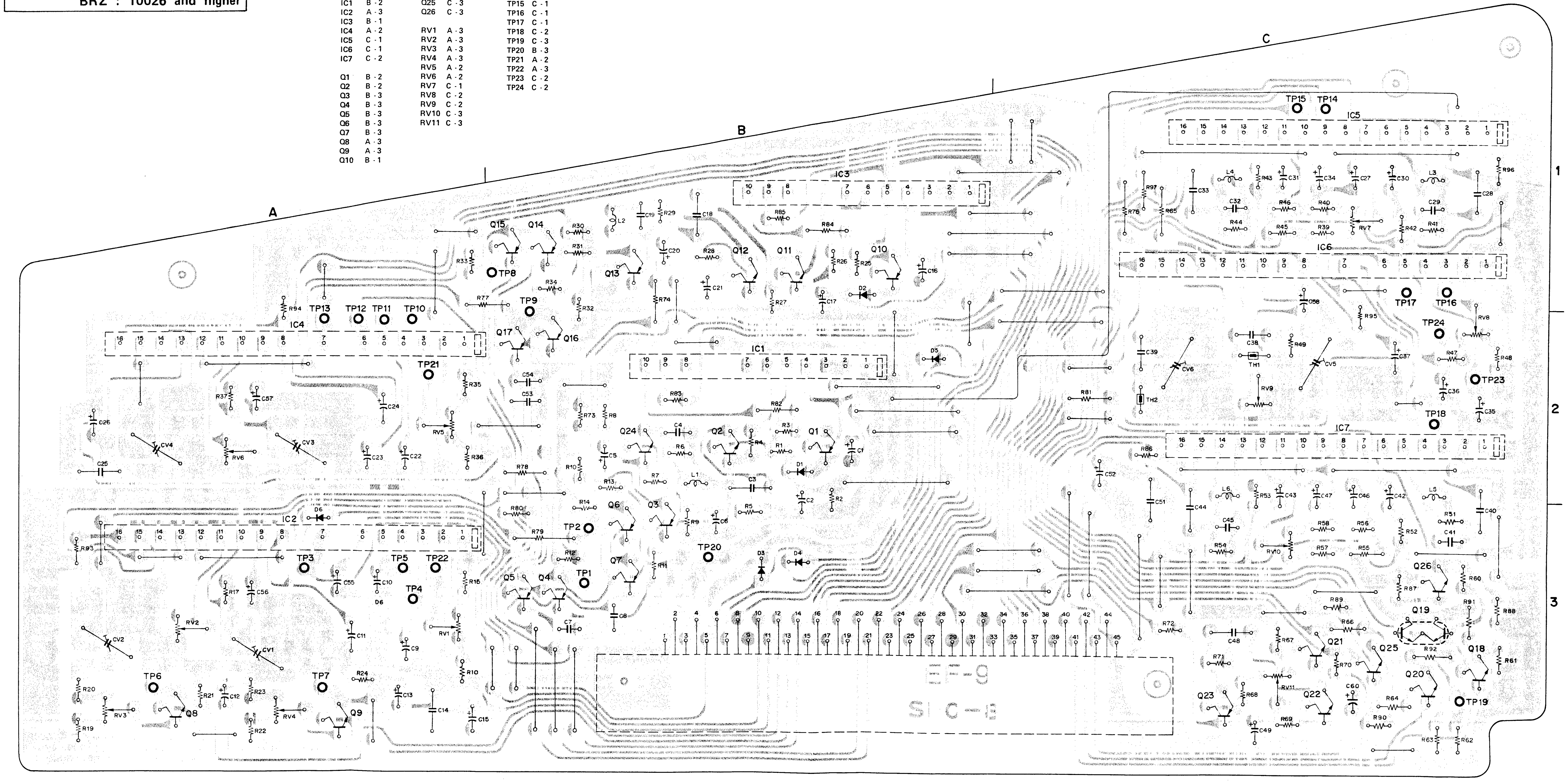

TYPE NO. IMPRINTED
2SC2785

EF-9 BOARD

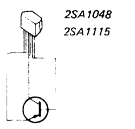
– SOLDERING SIDE –

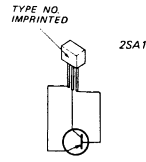
Serial No.		
J	:	10281 and higher
U/C	:	10801 and higher
AEP	:	11471 and higher
UK	:	10121 and higher
BRZ	:	10026 and higher

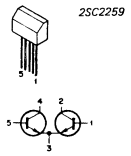
CV1	A - 3
CV2	A - 3
CV3	A - 2
CV4	A - 2
CV5	C - 2
CV6	C - 2
D1	B - 2
D2	B - 1
D3	B - 3
D4	B - 2
D5	B - 2
D6	A - 3
IC1	B - 2
IC2	A - 3
IC3	B - 1
IC4	A - 2
IC5	C - 1
IC6	C - 1
IC7	C - 2
Q1	B - 2
Q2	B - 2
Q3	B - 3
Q4	B - 3
Q5	B - 3
Q6	B - 3
Q7	B - 3
Q8	A - 3
Q9	A - 3
Q10	B - 1
Q11	B - 1
Q12	B - 1
Q13	B - 1
Q14	B - 1
Q15	B - 1
Q16	B - 2
Q17	B - 2
Q18	C - 3
Q19	C - 3
Q20	C - 3
Q21	C - 3
Q22	C - 3
Q23	C - 3
Q24	B - 2
Q25	C - 3
Q26	C - 3
RV1	A - 3
RV2	A - 3
RV3	A - 3
RV4	A - 3
RV5	A - 2
RV6	A - 2
RV7	C - 1
RV8	C - 2
RV9	C - 2
RV10	C - 3
RV11	C - 3
TP1	B - 3
TP2	B - 3
TP3	A - 3
TP4	A - 3
TP5	A - 3
TP6	A - 3
TP7	A - 3
TP8	B - 1
TP9	B - 2
TP10	A - 2
TP11	A - 2
TP12	A - 2
TP13	A - 2
TP14	C - 1
TP15	C - 1
TP16	C - 1
TP17	C - 1
TP18	C - 2
TP19	C - 3
TP20	B - 3
TP21	A - 2
TP22	A - 3
TP23	C - 2
TP24	C - 2

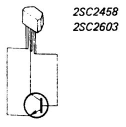

A
B
C
1
2
3
IC1
IC2
IC3
IC4
IC5
IC6
IC7
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
TP24
EF-9
SIC-B

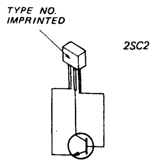
EF-9 BOARD
1-606-075-13
SEG-2000/2000A
SEG-2000P/2000AP
SEG-2000PM/2000APM


2SA1048
2SA1115

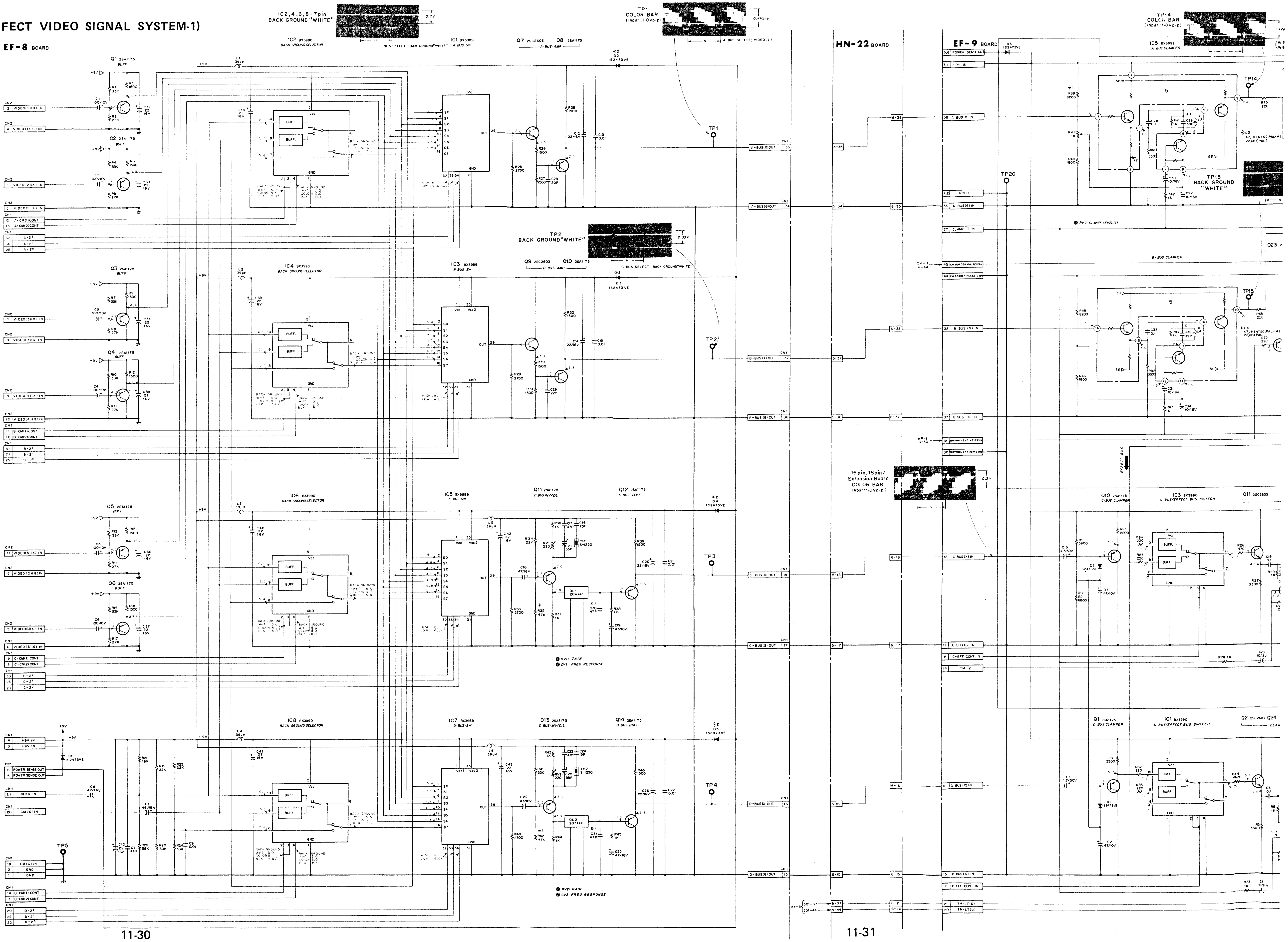

TYPE NO. IMPRINTED
2SA1175




2SC2458
2SC2603

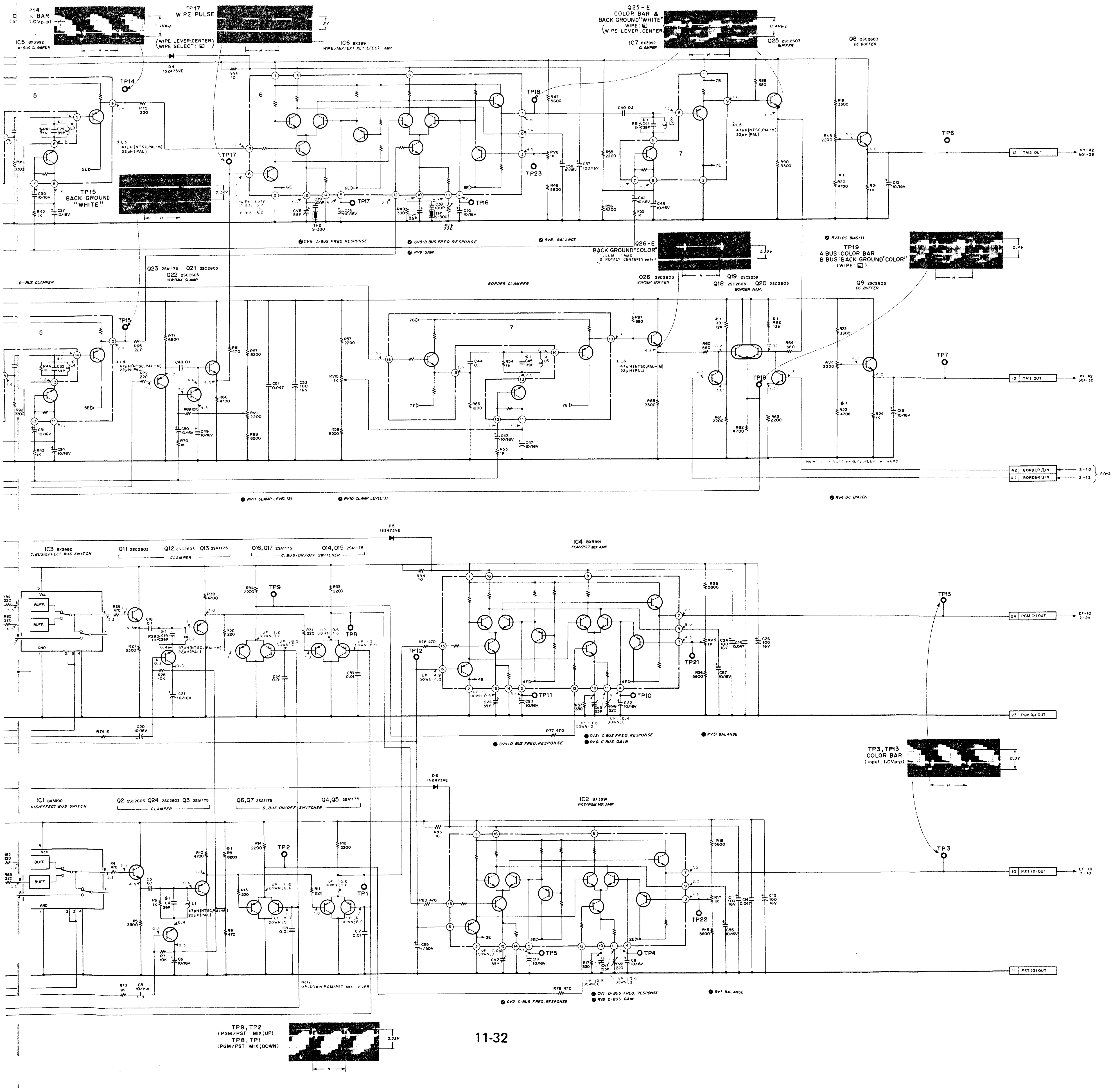

TYPE NO. IMPRINTED
2SC2785

EF-8, EF-9 BOARD (SPECIAL EFFECT VIDEO SIGNAL SYSTEM-1)


EF-8 BOARD
IC2,4,6,8-7pin BACK GROUND "WHITE"
BUS SELECT; BACK GROUND "WHITE"
TP1 COLOR BAR (Input; 1.0Vp-p)
A BUS SELECT; VIDEO(1)
TP2 BACK GROUND "WHITE"
B BUS SELECT; BACK GROUND "WHITE"
IC1 BX3989 A BUS SW
IC2 BX3990 BACK GROUND SELECTOR
IC3 BX3989 B BUS SW
IC4 BX3990 BACK GROUND SELECTOR
IC5 BX3989 C BUS SW
IC6 BX3990 BACK GROUND SELECTOR
IC7 BX3989 D BUS SW
IC8 BX3990 BACK GROUND SELECTOR
Q1 2SA1175 BUFF
Q2 2SA1175 BUFF
Q3 2SA1175 BUFF
Q4 2SA1175 BUFF
Q5 2SA1175 BUFF
Q6 2SA1175 BUFF
Q7 2SC2603
Q8 2SA1175
A BUS AMP
Q9 2SC2603
Q10 2SA1175
B BUS AMP
Q11 2SA1175 C BUS INV/DL
Q12 2SA1175 C BUS BUFF
Q13 2SA1175 D BUS INV/DL
Q14 2SA1175 D BUS BUFF
TP1
TP2
TP3
TP4
TP5
RV1: GAIN
CV1: FREQ RESPONSE
RV2: GAIN
CV2: FREQ RESPONSE
HN-22 BOARD
EF-9 BOARD
IC5 BX3992 A BUS CLAMPER
TP14 COLOR BAR (Input; 1.0Vp-p)
TP14
TP15
TP15 BACK GROUND "WHITE"
TP20
RV7 CLAMP LEVEL(1)
B BUS CLAMPER
16pin, 18pin/ Extension Board COLOR BAR (Input; 1.0Vp-p)
EFFECT BUS
Q10 2SA1175 C BUS CLAMPER
IC3 BX3990 C.BUS/EFFECT BUS SWITCH
Q11 2SC2603
Q1 2SA1175 D BUS CLAMPER
IC1 BX3990 D.BUS/EFFECT BUS SWITCH
Q2 2SC2603
Q24
Q23
A-BUS(X)OUT
A-BUS(G)OUT
B-BUS(X)OUT
B-BUS(G)OUT
C-BUS(X)OUT
C-BUS(G)OUT
D-BUS(X)OUT
D-BUS(G)OUT
VIDEO(1)(X) IN
VIDEO(1)(G) IN
VIDEO(2)(X) IN
VIDEO(2)(G) IN
VIDEO(3)(X) IN
VIDEO(3)(G) IN
VIDEO(4)(X) IN
VIDEO(4)(G) IN
VIDEO(5)(X) IN
VIDEO(5)(G) IN
VIDEO(6)(X) IN
VIDEO(6)(G) IN
+9V IN
POWER SENSE OUT
BLKG IN
CM(X) IN
CM(G) IN
GND
A BUS(X) IN
A BUS(G) IN
B BUS(X) IN
B BUS(G) IN
C BUS(X) IN
C BUS(G) IN
D BUS(X) IN
D BUS(G) IN
CLAMP PLS
C-EFF CONT IN
D EFF CONT IN
TM-LT(G)
TM-LT(X)

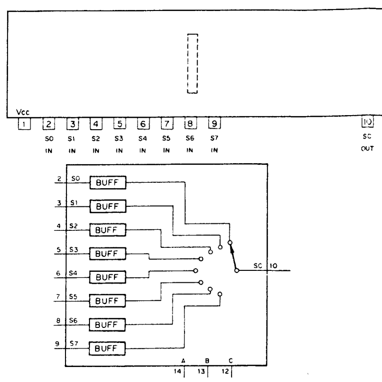
(For EF-8 Board)
NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C30, 31 51P ⟶ 47P R35, 42 51K ⟶ 47K	(J) 10441 ~ (U/C) 11261 ~ (AEP) 12821 ~ (UK) 10191 ~ (BRZ) 10046 ~
※2	D2, D3, D4, D5 1S1555 ⟶ 1S2473VE	(J) 10281 ~ (U/C) 10801 ~ (AEP) 11331 ~ (UK) 10121 ~ (BRZ) 10016 ~


IC5 BX3992 A-BUS CLAMPER
IC6 BX3991 WIPE/MIX/EXT KEY-EFECT AMP
IC7 BX3992 CLAMPER
Q25-E COLOR BAR & BACK GROUND "WHITE" (WIPE LEVER: CENTER)
Q25 2SC2603 BUFFER
Q8 2SC2603 DC BUFFER
TP14
TP15 BACK GROUND "WHITE"
TP17
TP16
TP18
TP23
TP6
TP7
TP19 A BUS: COLOR BAR B BUS: BACK GROUND "COLOR" (WIPE: ◧)
Q26-E BACK GROUND "COLOR"
Q23 2SA1175 Q21 2SC2603 Q22 2SC2603 WW/MIX CLAMP
BORDER CLAMPER
Q26 2SC2603 BORDER BUFFER
Q19 2SC2259 Q18 2SC2603 Q20 2SC2603 BORDER NAM.
Q9 2SC2603 DC BUFFER
12 TM3 OUT
13 TM1 OUT
42 BORDER Y IN
41 BORDER R-Y IN
IC3 BX3990 C-BUS/EFFECT BUS SWITCH
Q11 2SC2603 Q12 2SC2603 Q13 2SA1175 CLAMPER
Q16,Q17 2SA1175 C-BUS-ON/OFF SWITCHER
Q14,Q15 2SA1175
IC4 BX3991 PGM/PST MIX AMP
TP9
TP8
TP12
TP11
TP10
TP21
TP13
24 PGM (X) OUT
23 PGM (G) OUT
TP3, TP13 COLOR BAR (input; 1.0Vp-p)
IC1 BX3990 BUS/EFFECT BUS SWITCH
Q2 2SC2603 Q24 2SC2603 Q3 2SA1175 CLAMPER
Q6,Q7 2SA1175 D-BUS-ON/OFF SWITCHER
Q4,Q5 2SA1175
IC2 BX3991 PST/PGM MIX AMP
TP2
TP1
TP5
TP4
TP22
TP3
10 PST (X) OUT
11 PST (G) OUT
TP9, TP2 (PGM/PST MIX; UP)
TP8, TP1 (PGM/PST MIX; DOWN)

BX3989 (SONY)
8-CHANNEL MULTIPLEXER WITH BUFFER

—REAR VIEW—

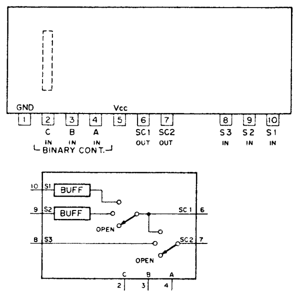

Vcc
GND
Vcc
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
S0 IN
S1 IN
S2 IN
S3 IN
S4 IN
S5 IN
S6 IN
S7 IN
SC OUT
C IN
B IN
A IN
BINARY CONTROL
BUFF
SC
A
B
C

C	B	A	"ON" CHANNEL
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	0	0	4
1	0	1	5
1	1	0	6
1	1	1	7

1 ; HIGH LEVEL
0 ; LOW LEVEL

BX3990 (SONY)
3-CHANNEL MULTIPLEXER

—REAR VIEW—


GND
Vcc
1
2
3
4
5
6
7
8
9
10
C IN
B IN
A IN
BINARY CONT.
SC1 OUT
SC2 OUT
S3 IN
S2 IN
S1 IN
BUFF
OPEN
SC1
SC2
C
B
A

CONT. INPUTS			OUTPUTS	
C	B	A	SC 1	SC2
0	0	0	S1	S1
0	0	1	S1	S3
0	1	0	OPEN	OPEN
0	1	1	OPEN	S3
1	0	0	OPEN	OPEN
1	0	1	OPEN	S3
1	1	0	S2	S2
1	1	1	S2	S3

1 ; HIGH LEVEL
0 ; LOW LEVEL

(For EF-9 Board)
NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C4,19,29,32,41,45 43P → 39P R2 6200 → 6800 R8 9100 → 8200 R20,23 4300 → 4700 R39 7500 → 8200 R91,92 13K → 12K	(J) 10441 ~ (U/C) 11261 ~ (AEP) 12821 ~ (UK) 10191 ~ (BRZ) 10046 ~

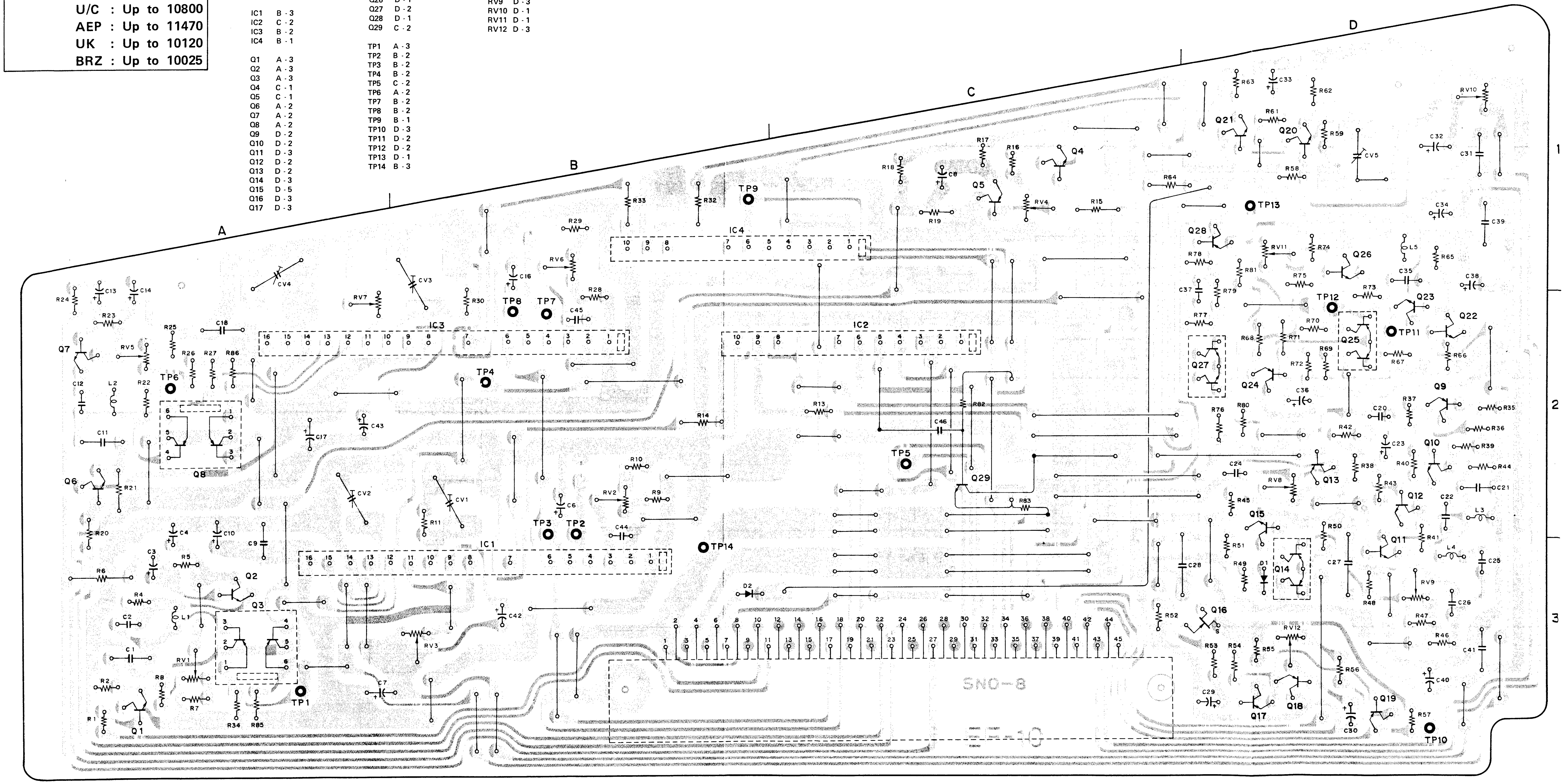
NOTE:

1. All voltage are measured with a digital voltmeter (input impedance 10MΩ).
2. Waveform photographs are taken with color bar signal (1 Vp-p) input to "VIDEO IN".

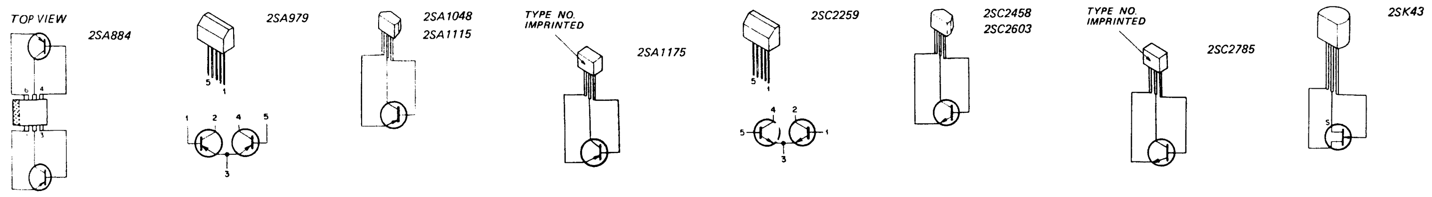
EF-10 BOARD
– SOLDERING SIDE –

Serial No. J	:	Up to 10280
U/C	:	Up to 10800
AEP	:	Up to 11470
UK	:	Up to 10120
BRZ	:	Up to 10025

CV1	B - 2
CV2	A - 2
CV3	B - 1
CV4	A - 1
CV5	D - 1
D1	D - 3
D2	B - 3
IC1	B - 3
IC2	C - 2
IC3	B - 2
IC4	B - 1
Q1	A - 3
Q2	A - 3
Q3	A - 3
Q4	C - 1
Q5	C - 1
Q6	A - 2
Q7	A - 2
Q8	A - 2
Q9	D - 2
Q10	D - 2
Q11	D - 3
Q12	D - 2
Q13	D - 2
Q14	D - 3
Q15	D - 5
Q16	D - 3
Q17	D - 3
Q18	D - 3
Q19	D - 3
Q20	D - 1
Q21	D - 1
Q22	D - 2
Q23	D - 2
Q24	D - 2
Q25	D - 2
Q26	D - 1
Q27	D - 2
Q28	D - 1
Q29	C - 2
TP1	A - 3
TP2	B - 2
TP3	B - 2
TP4	B - 2
TP5	C - 2
TP6	A - 2
TP7	B - 2
TP8	B - 2
TP9	B - 1
TP10	D - 3
TP11	D - 2
TP12	D - 2
TP13	D - 1
TP14	B - 3
RV1	A - 3
RV2	B - 2
RV3	B - 3
RV4	C - 1
RV5	A - 2
RV6	B - 1
RV7	B - 1
RV8	D - 2
RV9	D - 3
RV10	D - 1
RV11	D - 1
RV12	D - 3

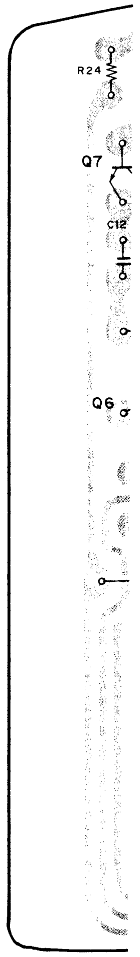

A
B
C
D
1
2
3
IC1
IC2
IC3
IC4
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
Q23
Q24
Q25
Q26
Q27
Q28
Q29
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
CV1
CV2
CV3
CV4
CV5
RV1
RV2
RV3
RV4
RV5
RV6
RV7
RV8
RV9
RV10
RV11
RV12
D1
D2
L1
L2
L3
L4
L5
SNO-8

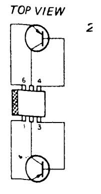
EF-10 BOARD
1-606-080-12
SEG-2000/2000A
SEG-2000P/2000AP
SEG-2000PM/2000APM


TOP VIEW
2SA884
2SA979
2SA1048
2SA1115
TYPE NO. IMPRINTED
2SA1175
2SC2259
2SC2458
2SC2603
TYPE NO. IMPRINTED
2SC2785
2SK43

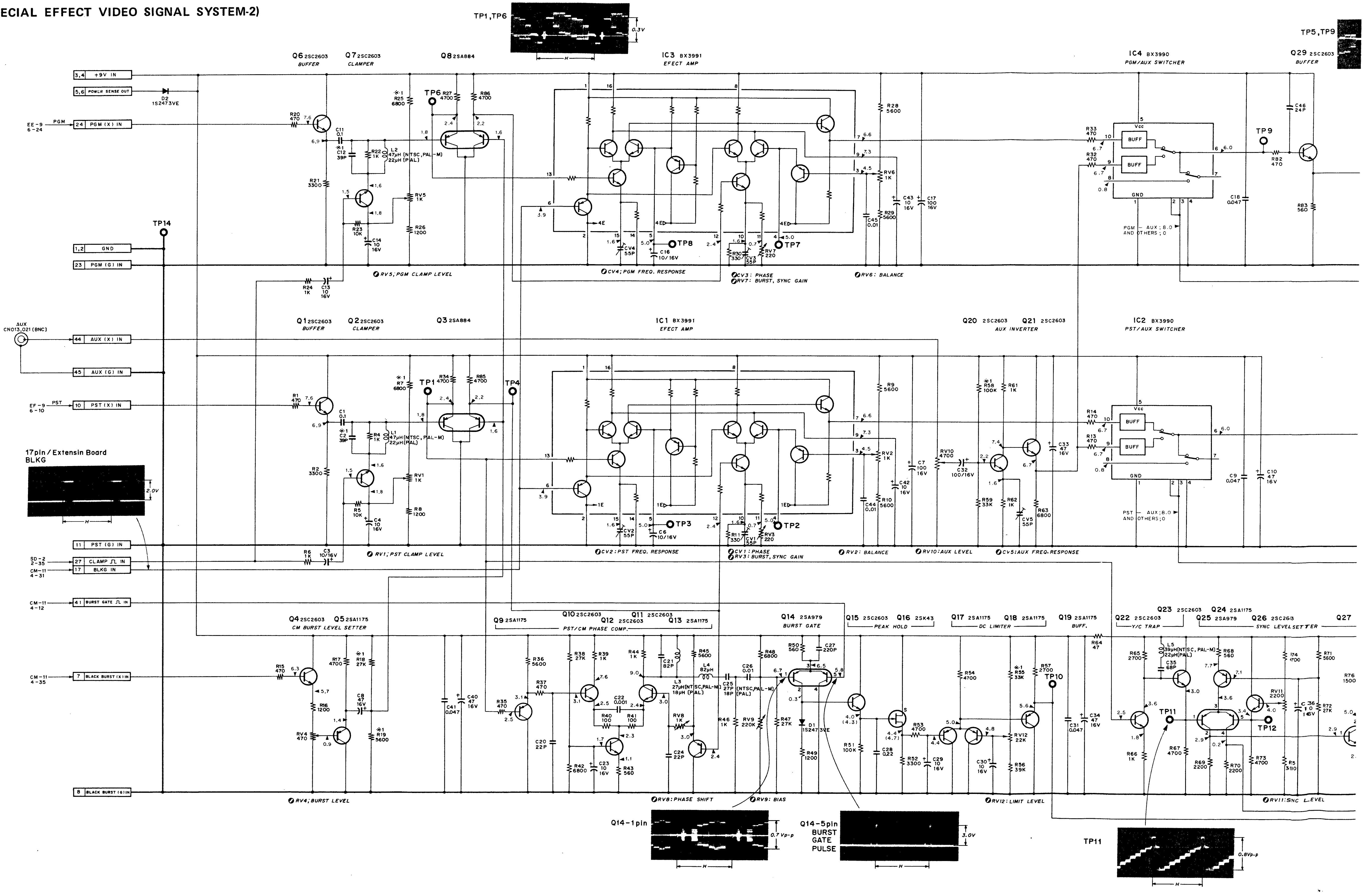
EF-10 BO
– SOLDEI

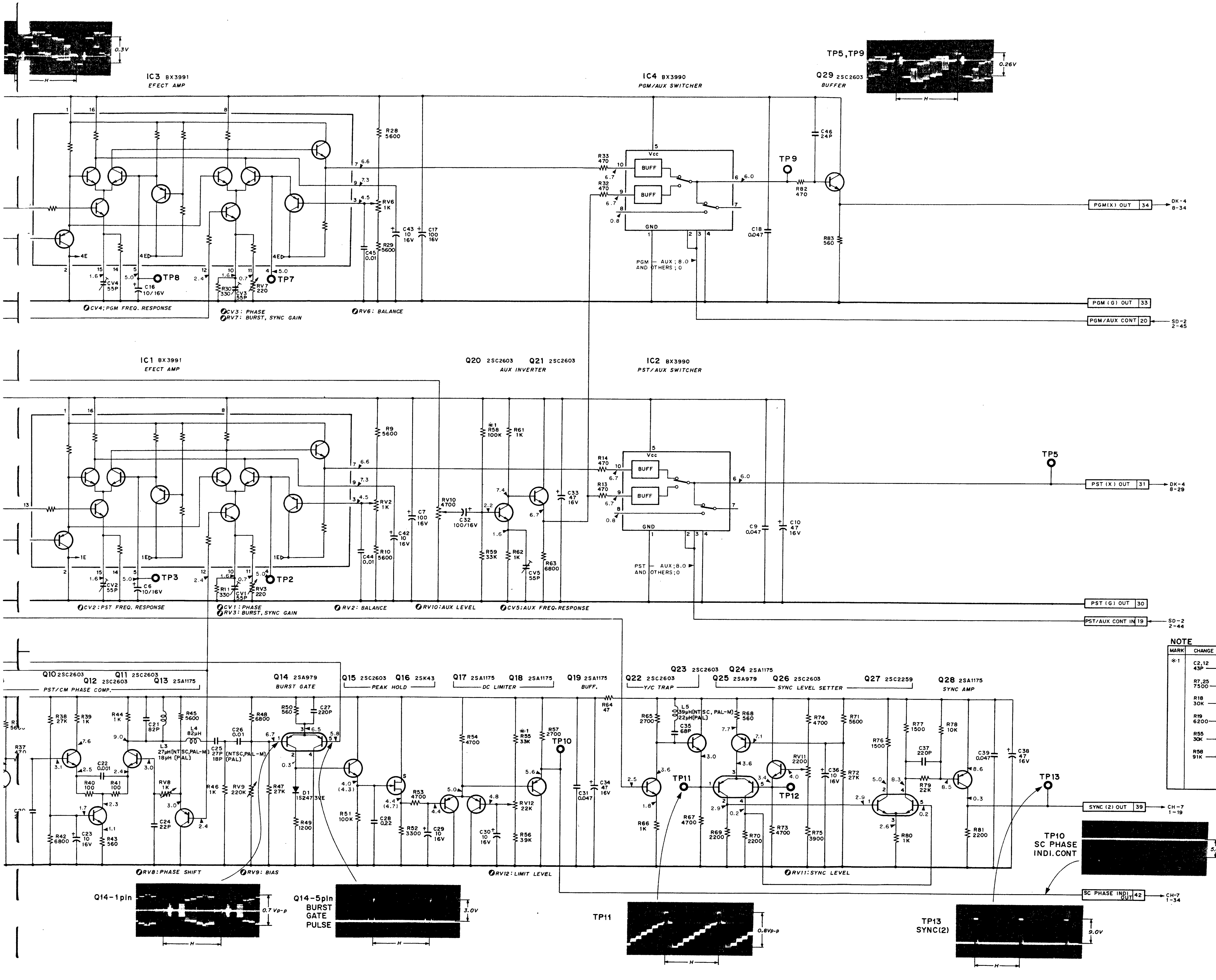
Serial No


R24
Q7
C12
Q6



EF-10 BOARD (SPECIAL EFFECT VIDEO SIGNAL SYSTEM-2)

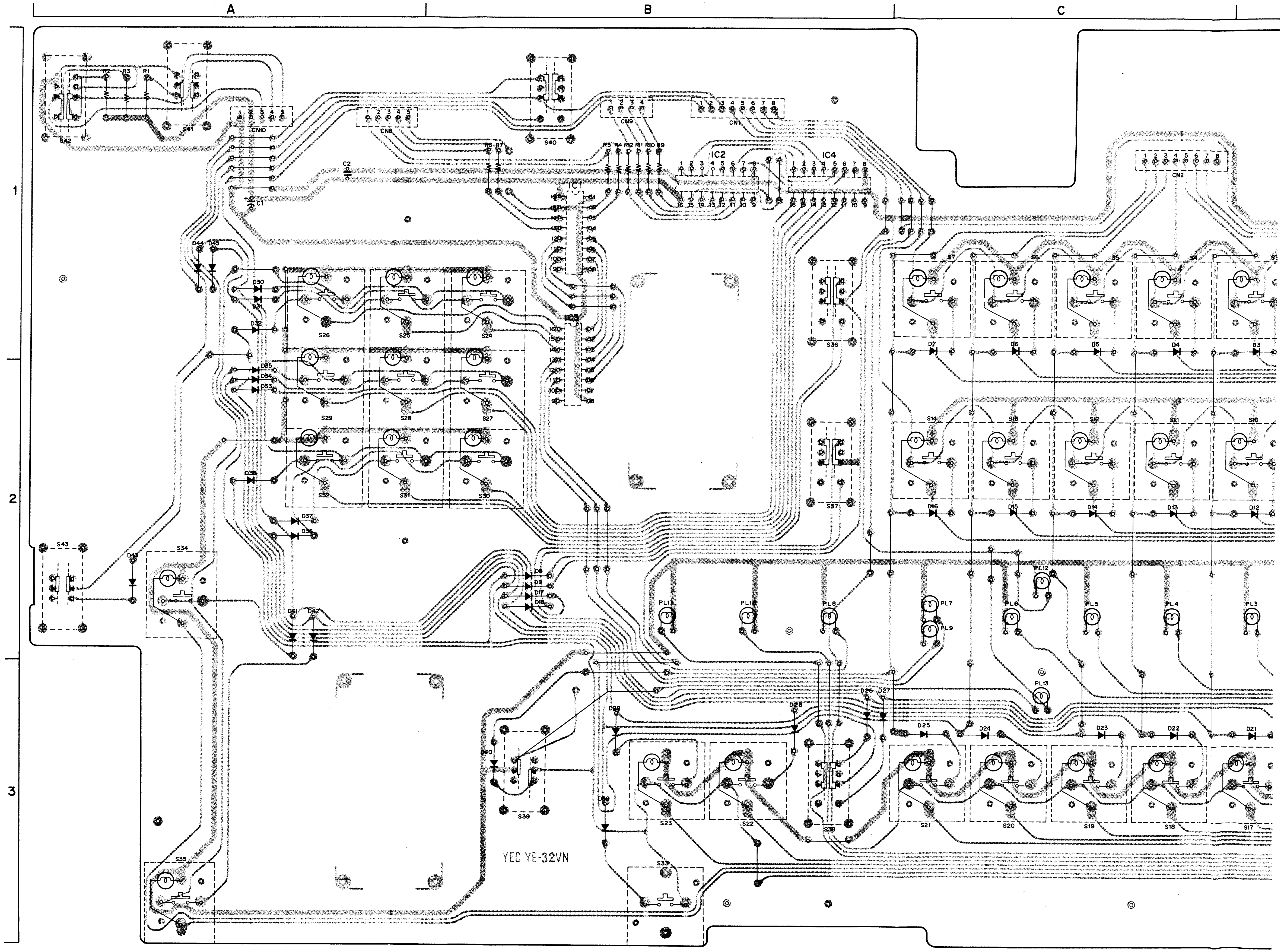

TP1,TP6
0.3V
H
TP5,TP9
Q6 2SC2603 BUFFER
Q7 2SC2603 CLAMPER
Q8 2SA884
IC3 BX3991 EFECT AMP
IC4 BX3990 PGM/AUX SWITCHER
Q29 2SC2603 BUFFER
3,4 +9V IN
5,6 POWER SENSE OUT
D2 1S2473VE
EE-9 6-24
PGM
24 PGM (X) IN
TP6
TP14
TP8
TP7
TP9
1,2 GND
23 PGM (G) IN
RV5; PGM CLAMP LEVEL
CV4; PGM FREQ. RESPONSE
CV3: PHASE
RV7: BURST, SYNC GAIN
RV6: BALANCE
PGM — AUX ; 8.0
AND OTHERS ; 0
AUX CN013,021 (BNC)
44 AUX (X) IN
45 AUX (G) IN
Q1 2SC2603 BUFFER
Q2 2SC2603 CLAMPER
Q3 2SA884
IC1 BX3991 EFECT AMP
Q20 2SC2603
Q21 2SC2603
AUX INVERTER
IC2 BX3990 PST/AUX SWITCHER
EF-9 6-10
PST
10 PST (X) IN
TP1
TP4
TP3
TP2
17pin / Extensin Board BLKG
2.0V
11 PST (G) IN
SD-2 2-35
27 CLAMP ⊓ IN
CM-11 4-31
17 BLKG IN
RV1; PST CLAMP LEVEL
CV2: PST FREQ. RESPONSE
CV1: PHASE
RV3: BURST, SYNC GAIN
RV2: BALANCE
RV10: AUX LEVEL
CV5: AUX FREQ. RESPONSE
PST — AUX ; 8.0
AND OTHERS ; 0
CM-11 4-12
41 BURST GATE ⊓ IN
Q4 2SC2603
Q5 2SA1175
CM BURST LEVEL SETTER
Q9 2SA1175
Q10 2SC2603
Q12 2SC2603
Q11 2SC2603
Q13 2SA1175
PST/CM PHASE COMP.
Q14 2SA979 BURST GATE
Q15 2SC2603
Q16 2SK43
PEAK HOLD
Q17 2SA1175
Q18 2SA1175
DC LIMITER
Q19 2SA1175 BUFF.
Q22 2SC2603 Y/C TRAP
Q23 2SC2603
Q24 2SA1175
Q25 2SA979
Q26 2SC2613
SYNC LEVEL SETTER
Q27
CM-11 4-35
7 BLACK BURST (X) IN
8 BLACK BURST (G) IN
TP10
TP11
TP12
RV4; BURST LEVEL
RV8: PHASE SHIFT
RV9: BIAS
RV12: LIMIT LEVEL
RV11: SNC LEVEL
Q14-1pin
0.7 Vp-p
Q14-5pin BURST GATE PULSE
3.0V
TP11
0.8Vp-p

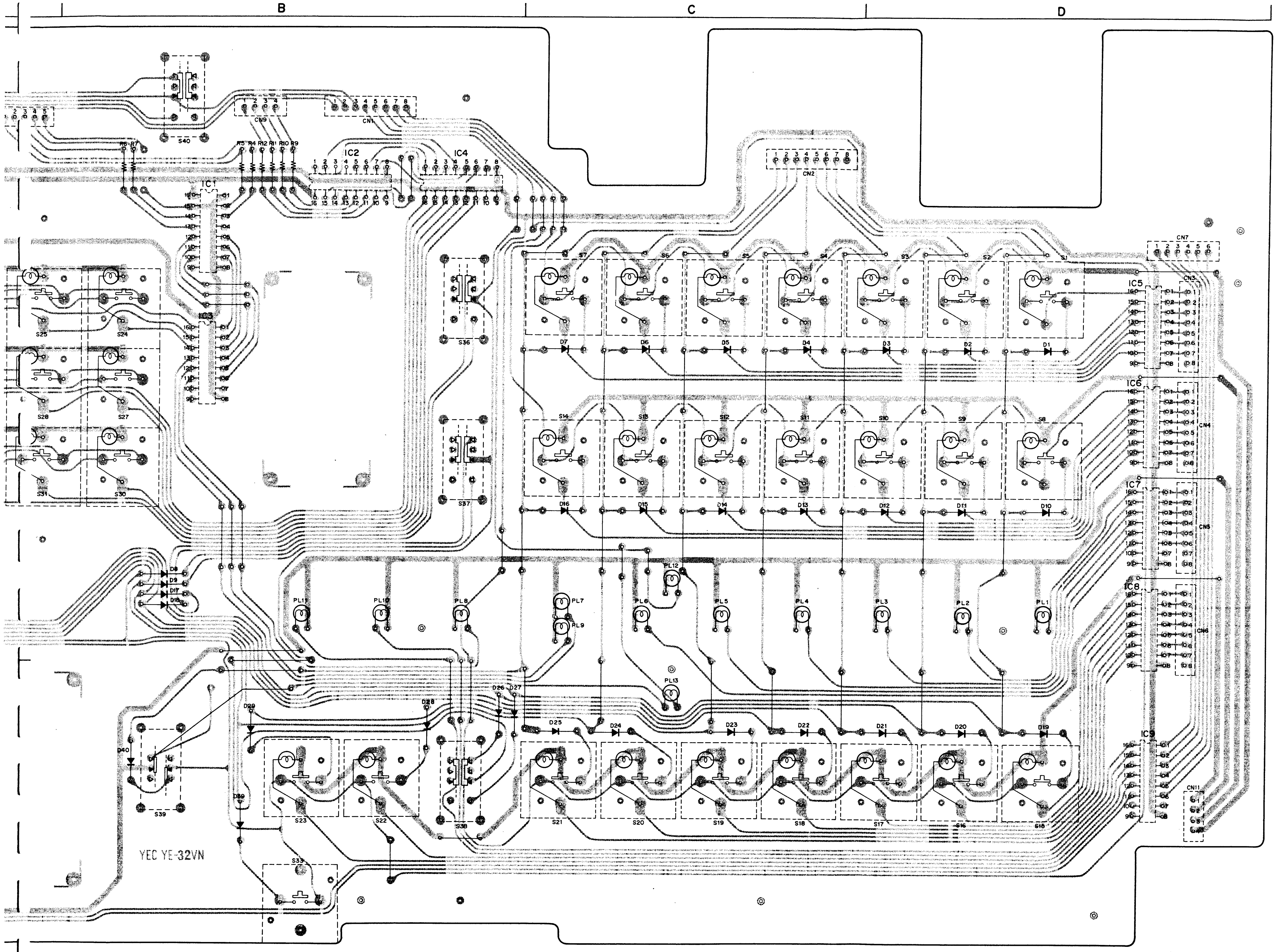

IC3 BX3991 EFECT AMP
IC4 BX3990 PGM/AUX SWITCHER
Q29 2SC2603 BUFFER
TP5, TP9
0.26V
0.3V
TP7
TP8
TP9
BUFF
Vcc
GND
PGM — AUX ; 8.0
AND OTHERS ; 0
PGM(X) OUT 34
DK-4 8-34
PGM (G) OUT 33
PGM/AUX CONT 20
SD-2 2-45
CV4: PGM FREQ. RESPONSE
CV3: PHASE
RV7: BURST, SYNC GAIN
RV6: BALANCE
IC1 BX3991 EFECT AMP
Q20 2SC2603
Q21 2SC2603 AUX INVERTER
IC2 BX3990 PST/AUX SWITCHER
TP5
TP3
TP2
PST (X) OUT 31
DK-4 8-29
PST — AUX ; 8.0
AND OTHERS ; 0
PST (G) OUT 30
PST/AUX CONT IN 19
SD-2 2-44
CV2: PST FREQ. RESPONSE
CV1: PHASE
RV3: BURST, SYNC GAIN
RV2: BALANCE
RV10: AUX LEVEL
CV5: AUX FREQ. RESPONSE
Q10 2SC2603
Q11 2SC2603
Q12 2SC2603
Q13 2SA1175
PST/CM PHASE COMP.
Q14 2SA979 BURST GATE
Q15 2SC2603
Q16 2SK43 PEAK HOLD
Q17 2SA1175
Q18 2SA1175 DC LIMITER
Q19 2SA1175 BUFF.
Q22 2SC2603 Y/C TRAP
Q23 2SC2603
Q24 2SA1175
Q25 2SA979
Q26 2SC2603 SYNC LEVEL SETTER
Q27 2SC2259
Q28 2SA1175 SYNC AMP
TP10
TP11
TP12
TP13
SYNC (2) OUT 39
CH-7 1-19
SC PHASE INDI OUT 42
CH-7 1-34
RV8: PHASE SHIFT
RV9: BIAS
RV12: LIMIT LEVEL
RV11: SYNC LEVEL
Q14-1pin
0.7Vp-p
Q14-5pin BURST GATE PULSE
3.0V
TP11
0.8Vp-p
TP10 SC PHASE INDI. CONT
5.6Vdc
TP13 SYNC(2)
9.0V
H

NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※1	C2,12 43P → 39P R7,25 7500 → 6800 R18 30K → 27K R19 6200 → 5600 R55 30K → 33K R58 91K → 100K	(J) 10441~ (U/C) 11261~ (AEP) 12821~ (UK) 10191~ (BRZ) 10046~

KY-17 BOARD
– SOLDERING SIDE –


A
B
C
1
2
3
S42
D1
R2
R3
R1
S41
CN10
CN8
S40
CN9
CN1
C2
C1
R6
R7
R5
R4
R12
R11
R10
R9
IC2
IC4
IC1
IC3
CN2
D44
D45
D30
D31
D32
D35
D34
D33
D38
D37
D36
S26
S25
S24
S29
S28
S27
S32
S31
S30
S36
S37
S7
S6
S5
S4
S3
D7
D6
D5
D4
D3
S14
S13
S12
S11
S10
D16
D15
D14
D13
D12
S43
D43
S34
D41
D42
D8
D9
D17
D18
PL11
PL10
PL8
PL7
PL9
PL6
PL12
PL5
PL4
PL3
PL13
D29
D28
D26
D27
D25
D24
D23
D22
D21
D40
S39
D39
S23
S22
S38
S21
S20
S19
S18
S17
S33
S35
YEC YE-32VN


B
C
D
CN1
CN2
CN3
CN4
CN5
CN6
CN7
CN9
CN11
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
R4
R5
R6
R7
R9
R10
R11
R12
S1
S2
S3
S4
S5
S6
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S11
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S28
S30
S31
S33
S36
S37
S38
S39
S40
D1
D2
D3
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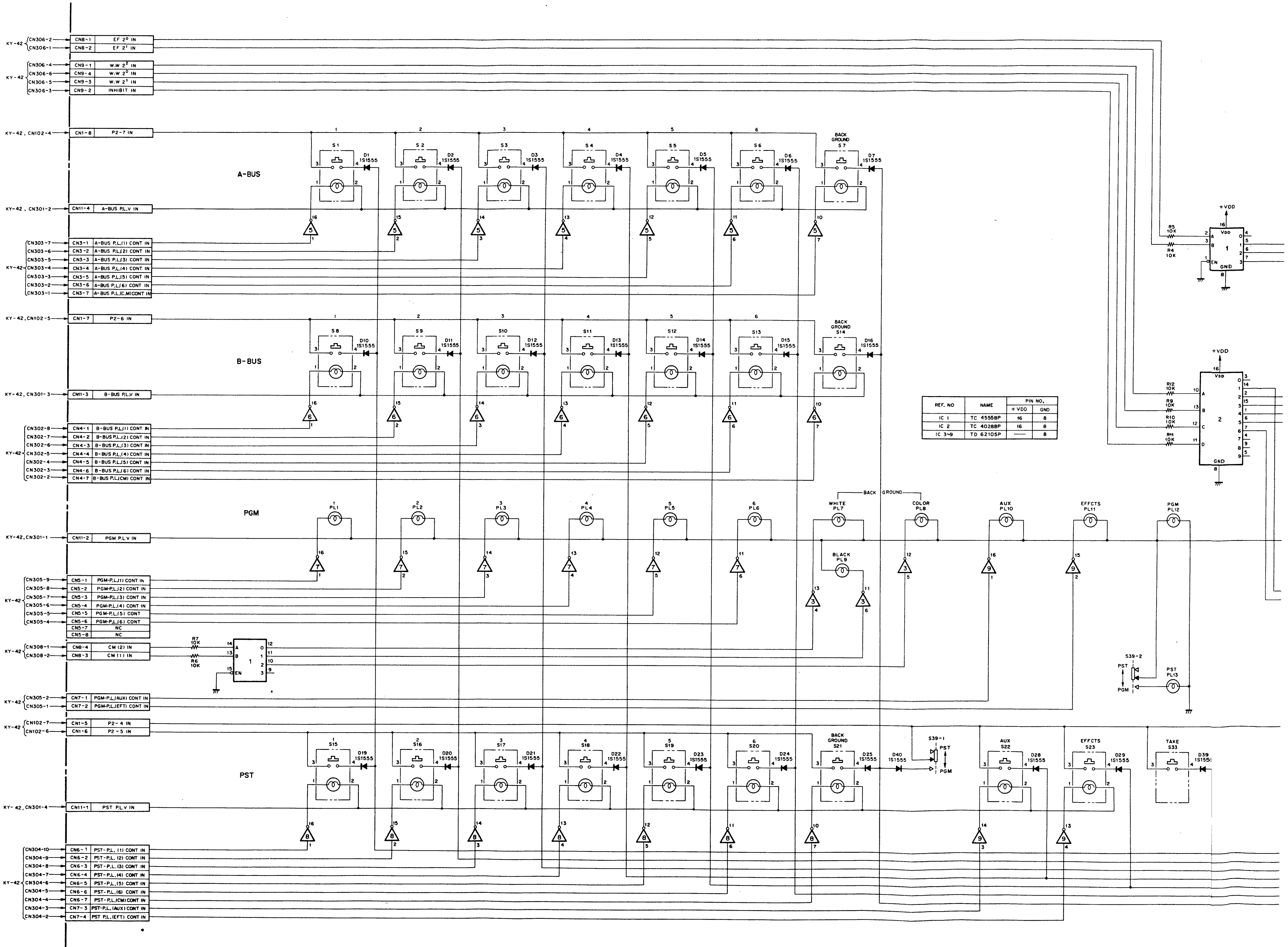
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
D25
D26
D27
D28
D29
D39
D40
PL1
PL2
PL3
PL4
PL5
PL6
PL7
PL8
PL9
PL10
PL11
PL12
PL13
YEC YE-32VN

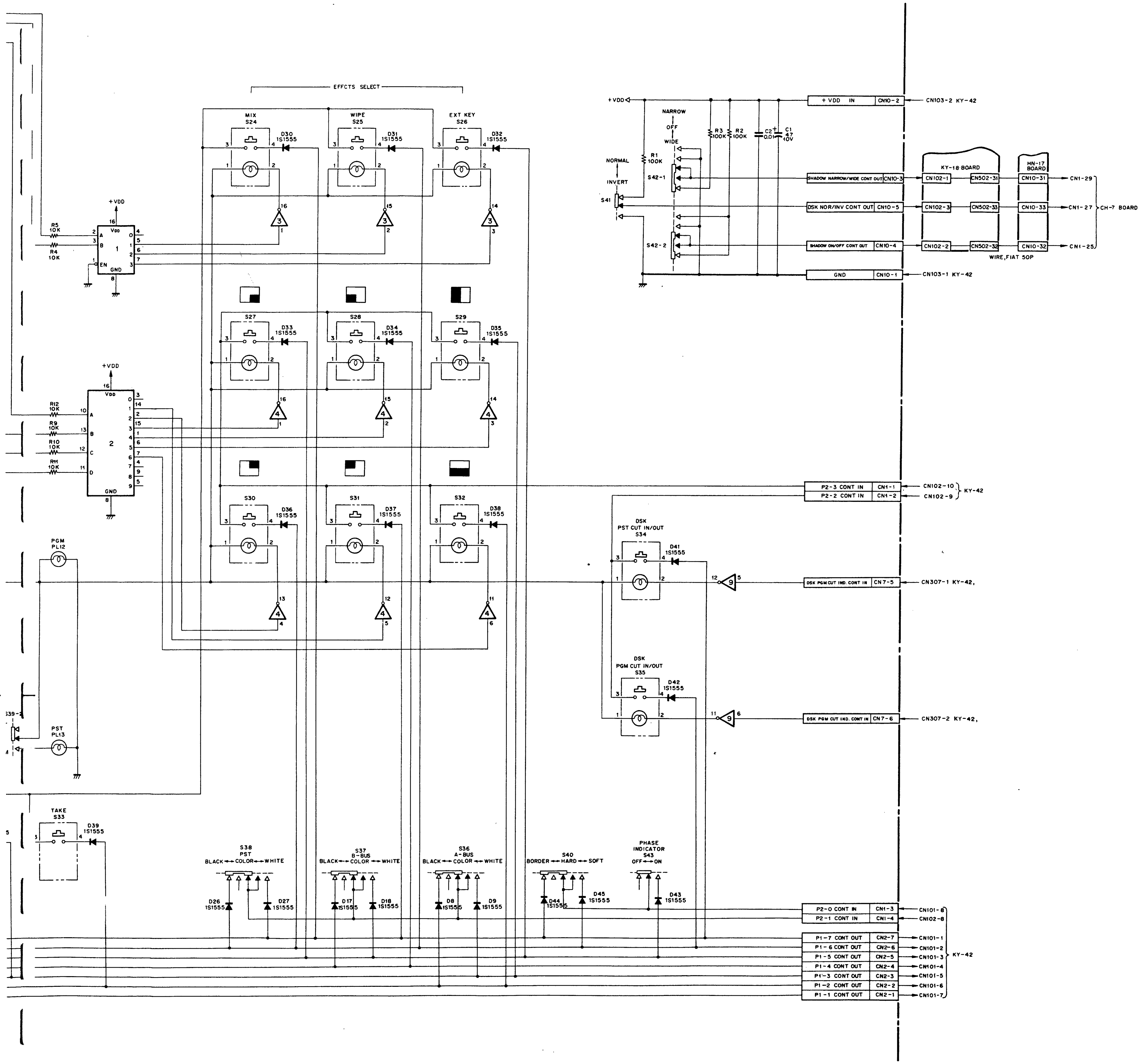
D1	D - 1
D2	D - 1
D3	D - 1
D4	C - 1
D5	C - 1
D6	C - 1
D7	C - 1
D8	B - 2
D9	B - 2
D10	D - 2
D11	D - 2
D12	D - 2
D13	C - 2
D14	C - 2
D15	C - 2
D16	C - 2
D17	B - 2
D18	B - 2
D19	D - 3
D20	D - 3
D21	D - 3
D22	C - 3
D23	C - 3
D24	C - 3
D25	C - 3
D26	B - 3
D27	B - 3
D28	B - 3
D29	B - 3
D30	A - 1
D31	A - 1
D32	A - 1
D33	A - 2
D34	A - 2
D35	A - 2
D36	A - 2
D37	A - 2
D38	A - 2
D39	B - 3
D40	B - 3
D41	A - 2
D42	A - 2
D43	A - 2
D44	A - 1
D45	A - 1
IC1	B - 1
IC2	B - 1
IC3	B - 1
IC4	B - 1
IC5	D - 1
IC6	D - 2
IC7	D - 2
IC8	D - 2
IC9	D - 3

KY-17 BOARD
1-606-069-14
SEG-2000/2000A
SEG-2000P/2000AP
SEG-2000PM/2000APM

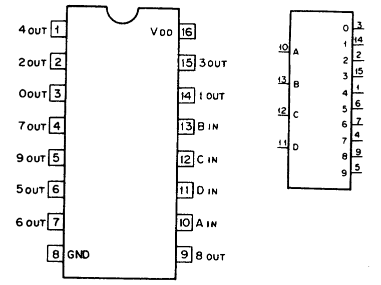
KY-17 BOARD (CONTROL SYSTEM-1)


KY-42 CN306-2 → CN8-1 EF 2⁰ IN
KY-42 CN306-1 → CN8-2 EF 2¹ IN
KY-42 CN306-4 → CN9-1 W.W 2² IN
CN306-6 → CN9-4 W.W 2⁰ IN
CN306-5 → CN9-3 W.W 2¹ IN
CN306-3 → CN9-2 INHIBIT IN
KY-42, CN102-4 → CN1-8 P2-7 IN
KY-42, CN301-2 → CN11-4 A-BUS P.L.V IN
KY-42 CN303-7 → CN3-1 A-BUS P.L.(1) CONT IN
CN303-6 → CN3-2 A-BUS P.L.(2) CONT IN
CN303-5 → CN3-3 A-BUS P.L.(3) CONT IN
CN303-4 → CN3-4 A-BUS P.L.(4) CONT IN
CN303-3 → CN3-5 A-BUS P.L.(5) CONT IN
CN303-2 → CN3-6 A-BUS P.L.(6) CONT IN
CN303-1 → CN3-7 A-BUS P.L.(C.M)CONT IN
KY-42, CN102-5 → CN1-7 P2-6 IN
KY-42, CN301-3 → CN11-3 B-BUS P.L.V IN
KY-42 CN302-8 → CN4-1 B-BUS P.L.(1) CONT IN
CN302-7 → CN4-2 B-BUS P.L.(2) CONT IN
CN302-6 → CN4-3 B-BUS P.L.(3) CONT IN
CN302-5 → CN4-4 B-BUS P.L.(4) CONT IN
CN302-4 → CN4-5 B-BUS P.L.(5) CONT IN
CN302-3 → CN4-6 B-BUS P.L.(6) CONT IN
CN302-2 → CN4-7 B-BUS P.L.(CM) CONT IN
KY-42, CN301-1 → CN11-2 PGM P.L.V IN
KY-42 CN305-9 → CN5-1 PGM-P.L.(1) CONT IN
CN305-8 → CN5-2 PGM-P.L.(2) CONT IN
CN305-7 → CN5-3 PGM-P.L.(3) CONT IN
CN305-6 → CN5-4 PGM-P.L.(4) CONT IN
CN305-5 → CN5-5 PGM-P.L.(5) CONT
CN305-4 → CN5-6 PGM-P.L.(6) CONT
CN5-7 NC
CN5-8 NC
KY-42 CN308-1 → CN8-4 CM (2) IN
CN308-2 → CN8-3 CM (1) IN
KY-42 CN305-2 → CN7-1 PGM-P.L.(AUX) CONT IN
CN305-1 → CN7-2 PGM-P.L.(EFT) CONT IN
KY-42 CN102-7 → CN1-5 P2-4 IN
CN102-6 → CN1-6 P2-5 IN
KY-42, CN301-4 → CN11-1 PST P.L.V IN
KY-42 CN304-10 → CN6-1 PST-P.L. (1) CONT IN
CN304-9 → CN6-2 PST-P.L. (2) CONT IN
CN304-8 → CN6-3 PST-P.L. (3) CONT IN
CN304-7 → CN6-4 PST-P.L. (4) CONT IN
CN304-6 → CN6-5 PST-P.L. (5) CONT IN
CN304-5 → CN6-6 PST-P.L. (6) CONT IN
CN304-4 → CN6-7 PST-P.L. (CM) CONT IN
CN304-3 → CN7-3 PST-P.L. (AUX) CONT IN
CN304-2 → CN7-4 PST P.L. (EFT) CONT IN
A-BUS
B-BUS
PGM
PST
S1 S2 S3 S4 S5 S6
BACK GROUND S7
S8 S9 S10 S11 S12 S13
BACK GROUND S14
S15 S16 S17 S18 S19 S20
BACK GROUND S21
AUX S22
EFFCTS S23
TAKE S33
D1–D29 1S1555
D39 1S1555
D40 1S1555
PL1 PL2 PL3 PL4 PL5 PL6
WHITE PL7
COLOR PL8
BLACK PL9
AUX PL10
EFFCTS PL11
PGM PL12
PST PL13
BACK GROUND
S39-1 PST PGM
S39-2 PST PGM
R4 10K
R5 10K
R6 10K
R7 10K
R9 10K
R10 10K
R11 10K
R12 10K
+VDD
VDD
GND
EN

REF. NO	NAME	PIN NO.	
		+ VDD	GND
IC 1	TC 4555BP	16	8
IC 2	TC 4028BP	16	8
IC 3~9	TD 62105P	——	8


EFFCTS SELECT
MIX
S24
WIPE
S25
EXT KEY
S26
D30
1S1555
D31
1S1555
D32
1S1555
S27
S28
S29
D33
1S1555
D34
1S1555
D35
1S1555
S30
S31
S32
D36
1S1555
D37
1S1555
D38
1S1555
+VDD
R5
10K
R4
10K
VDD
EN
GND
R12
10K
R9
10K
R10
10K
R11
10K
PGM
PL12
PST
PL13
S39-2
TAKE
S33
D39
1S1555
S38
PST
BLACK↔COLOR↔WHITE
D26
1S1555
D27
1S1555
S37
B-BUS
BLACK↔COLOR↔WHITE
D17
1S1555
D18
1S1555
S36
A-BUS
BLACK↔COLOR↔WHITE
D8
1S1555
D9
1S1555
S40
BORDER↔HARD↔SOFT
D44
1S1555
D45
1S1555
PHASE
INDICATOR
S43
OFF↔ON
D43
1S1555
+VDD
NARROW
OFF
WIDE
NORMAL
INVERT
S41
R1
100K
S42-1
S42-2
R3
100K
R2
100K
C2
0.01
C1
47
10V
+ VDD IN
CN10-2
CN103-2 KY-42
SHADOW NARROW/WIDE CONT OUT
CN10-3
DSK NOR/INV CONT OUT
CN10-5
SHADOW ON/OFF CONT OUT
CN10-4
GND
CN10-1
CN103-1 KY-42
KY-18 BOARD
CN102-1
CN102-3
CN102-2
CN502-31
CN502-33
CN502-32
HN-17
BOARD
CN10-31
CN10-33
CN10-32
CN1-29
CN1-27
CN1-25
CH-7 BOARD
WIRE,FIAT 50P
P2-3 CONT IN
CN1-1
CN102-10
P2-2 CONT IN
CN1-2
CN102-9
KY-42
DSK
PST CUT IN/OUT
S34
D41
1S1555
DSK
PGM CUT IN/OUT
S35
D42
1S1555
DSK PGM CUT IND. CONT IN
CN7-5
CN307-1 KY-42,
DSK PGM CUT IND. CONT IN
CN7-6
CN307-2 KY-42,
P2-0 CONT IN
CN1-3
CN101-8
P2-1 CONT IN
CN1-4
CN102-8
P1-7 CONT OUT
CN2-7
CN101-1
P1-6 CONT OUT
CN2-6
CN101-2
P1-5 CONT OUT
CN2-5
CN101-3
P1-4 CONT OUT
CN2-4
CN101-4
P1-3 CONT OUT
CN2-3
CN101-5
P1-2 CONT OUT
CN2-2
CN101-6
P1-1 CONT OUT
CN2-1
CN101-7
KY-42

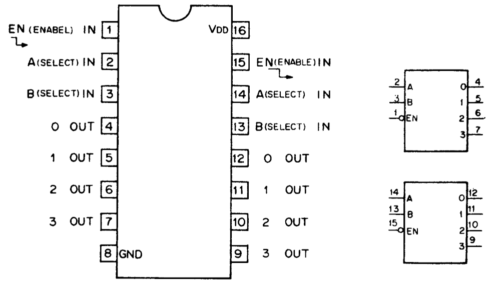
TC4028BP (TOSHIBA)
C-MOS BCD TO DECIMAL DECODER
—TOP VIEW—


4 OUT 1
2 OUT 2
0 OUT 3
7 OUT 4
9 OUT 5
5 OUT 6
6 OUT 7
8 GND
VDD 16
15 3 OUT
14 1 OUT
13 B IN
12 C IN
11 D IN
10 A IN
9 8 OUT
A
B
C
D

STATE	INPUTS				OUTPUTS									
	D	C	B	A	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	1	0	0	0	0	0	0	0	0
2	0	0	1	0	0	0	1	0	0	0	0	0	0	0
3	0	0	1	1	0	0	0	1	0	0	0	0	0	0
4	0	1	0	0	0	0	0	0	1	0	0	0	0	0
5	0	1	0	1	0	0	0	0	0	1	0	0	0	0
6	0	1	1	0	0	0	0	0	0	0	1	0	0	0
7	0	1	1	1	0	0	0	0	0	0	0	1	0	0
8	1	X	X	0	0	0	0	0	0	0	0	0	1	0
9	1	X	X	1	0	0	0	0	0	0	0	0	0	1

0; LOW
1; HIGH
X; LOW OR HIGH

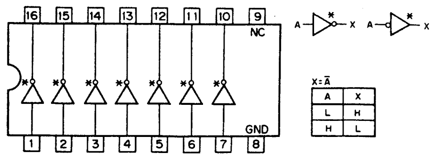
TC4555BP (TOSHIBA)
C-MOS BINARY TO 1-OF-4 DECODER / DEMULTIPLEXER
—TOP VIEW—


EN (ENABEL) IN 1
A (SELECT) IN 2
B (SELECT) IN 3
0 OUT 4
1 OUT 5
2 OUT 6
3 OUT 7
8 GND
VDD 16
15 EN (ENABLE) IN
14 A (SELECT) IN
13 B (SELECT) IN
12 0 OUT
11 1 OUT
10 2 OUT
9 3 OUT
A
B
EN

INPUTS			OUTPUTS			
EN	B	A	3	2	1	0
0	0	0	0	0	0	1
0	0	1	0	0	1	0
0	1	0	0	1	0	0
0	1	1	1	0	0	0
1	X	X	0	0	0	0

X = DON'T CARE
0 = LOW LEVEL
1 = HIGH LEVEL

TD 62105 P (TOSHIBA)
TTL INVERTING DRIVER WITH OPEN COLLECTOR
- TOP VIEW-

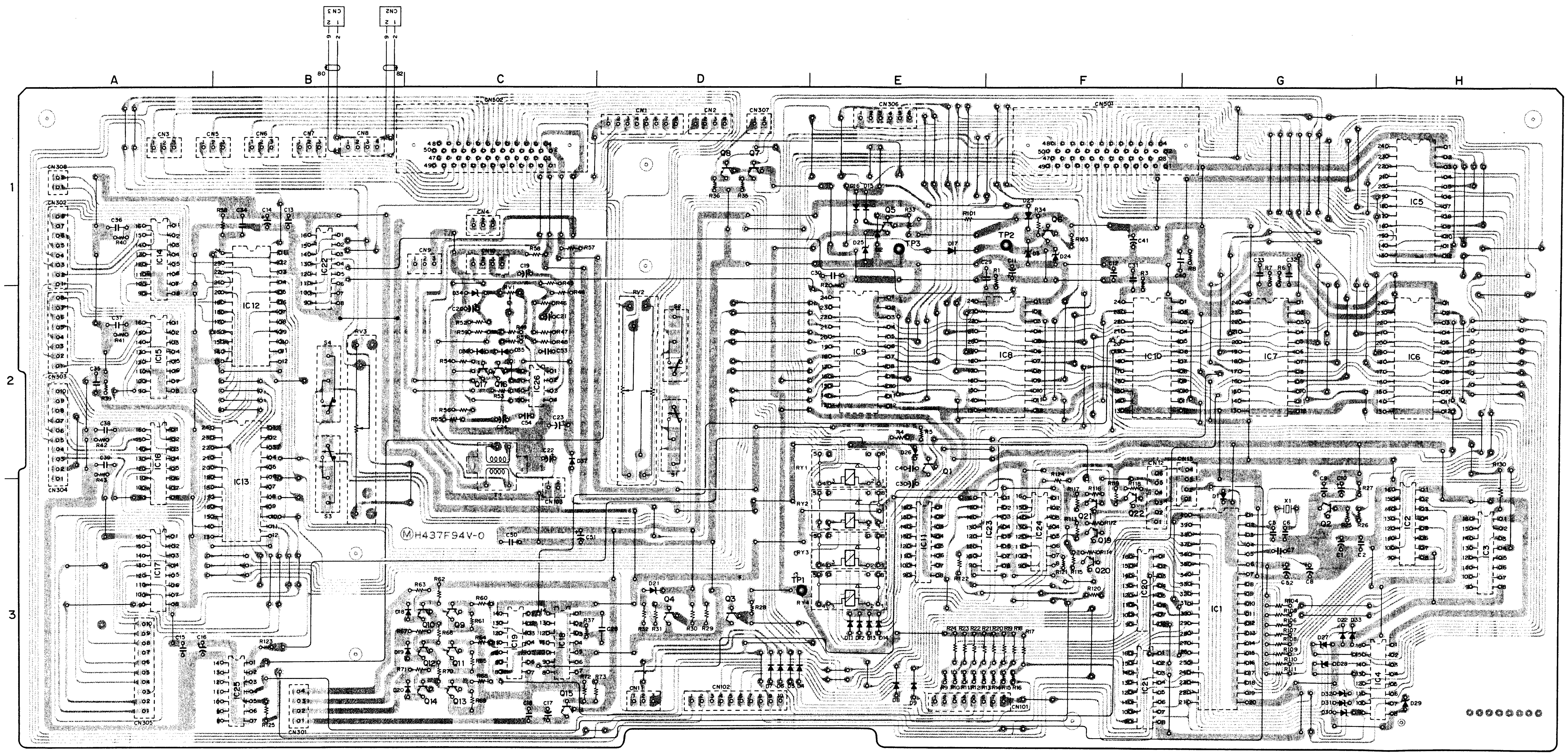

16
15
14
13
12
11
10
9
NC
GND
1
2
3
4
5
6
7
8
A
X

$X = \bar{A}$

A	X
L	H
H	L

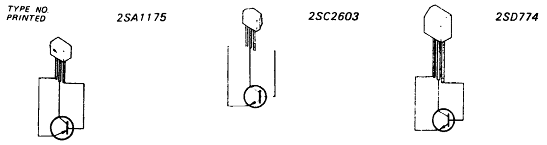
* OPEN COLLECTOR

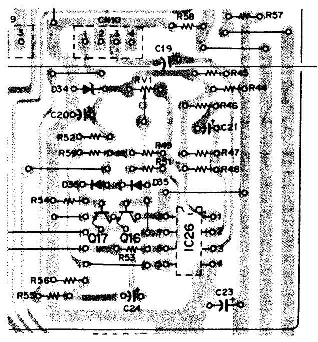
KY-42 BOARD


CN3
CN2
A
B
C
D
E
F
G
H
1
2
3
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
IC20
IC21
IC22
IC23
IC24
IC25
IC26
CN502
CN501
CN306
CN307
CN1
CN2
CN102
CN101
CN301
CN305
CN308
CN302
CN303
CN304
RV1
RV2
RV3
S1
S2
S3
S4
RY1
RY2
RY3
RY4
TP1
TP2
TP3
X1
H437F94V-0

KY-42 BOARD
1-610-344-12,13
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

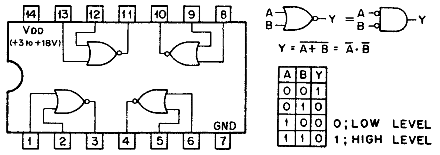
CN1	D-1
CN2	D-1
CN3	A-1
CN4	C-1
CN5	A-1
CN6	B-1
CN7	B-1
CN8	B-1
CN9	C-1
CN10	C-1
CN101	E-3
CN102	D-3
CN103	C-3
CN112	F-3
CN113	G-3
CN301	B-3
CN302	A-1
CN303	A-2
CN304	A-2
CN305	A-3
CN306	E-1
CN307	D-1
CN308	A-1
CN501	F-1
CN502	C-1
D1	G-3
D2	E-1
D3	F-1
D4	D-3
D5	D-3
D6	D-3
D7	D-3
D8	E-3
D9	E-3
D10	D-3
D11	E-3
D12	E-3
D13	E-3
D14	E-3
D15	E-1
D16	E-1
D17	E-1
D18	C-3
D19	C-3
D20	C-3
D21	D-3
D22	G-3
D23	F-1
D24	F-1
D25	E-1
D26	E-2
D27	G-3
D28	G-3
D29	H-3
D30	G-3
D31	G-3
D32	G-3
D33	G-3
D34	C-2
D35	C-2
D36	C-2
D37	C-2
IC1	G-3
IC2	H-3
IC3	H-4
IC4	H-3
IC5	H-1
IC6	H-2
IC7	G-2
IC8	F-2
IC9	E-2
IC10	F-2
IC11	E-3
IC12	B-2
IC13	B-2
IC14	A-1
IC15	A-2
IC16	A-2
IC17	A-3
IC18	C-3
IC19	C-3
IC20	F-3
IC21	F-3
IC22	B-1
IC23	F-3
IC24	F-3
IC25	B-3
IC26	C-2
Q1	E-2
Q2	G-3
Q3	D-3
Q4	D-3
Q5	E-1
Q6	F-1
Q7	D-1
Q8	D-1
Q9	C-3
Q10	C-3
Q11	C-3
Q12	C-3
Q13	C-3
Q14	C-3
Q15	C-3
Q16	C-2
Q17	C-2
Q19	F-3
Q20	F-3
Q21	F-3
Q22	F-3
RV1	C-2
RV2	D-2
RV3	B-2
RY1	E-2
RY2	E-3
RY3	E-3
RY4	E-3
S1	D-2
S2	D-2
S3	B-2
S4	B-2
TP1	D-3
TP2	F-1
TP3	E-1
X1	G-3


TYPE NO. PRINTED
2SA1175
2SC2603
2SD774


CN10
R58
R57
C19
RV1
D34
R46
C20
R49
C21
R52
R47
R48
D35
R54
Q17
Q16
IC26
R53
R56
C24
C23

KY-42 BOARD
1-610-344-11
-SOLDERING SIDE-

TC4001BP (TOSHIBA)
C-MOS 2-INPUT NOR GATE
— TOP VIEW —

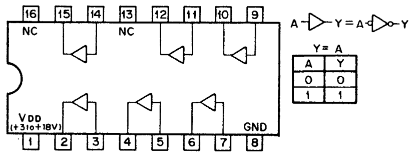

VDD (+3 to +18V)
GND
A
B
Y

$Y = \overline{A+B} = \overline{A}\cdot\overline{B}$

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

0; LOW LEVEL
1; HIGH LEVEL

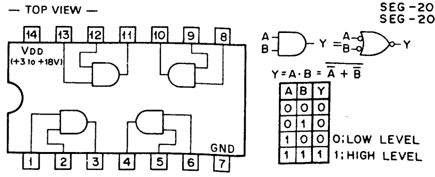
TC4050BP (TOSHIBA)
C-MOS NON-INVERTING TYPE BUFFER/CONVERTER
— TOP VIEW —


NC
NC
VDD (+3 to +18V)
GND
A
Y

Y = A

A	Y
0	0
1	1

TC4081BP (TOSHIBA)
C-MOS 2-INPUT AND GATE
— TOP VIEW —


VDD (+3 to +18V)
GND
A
B
Y

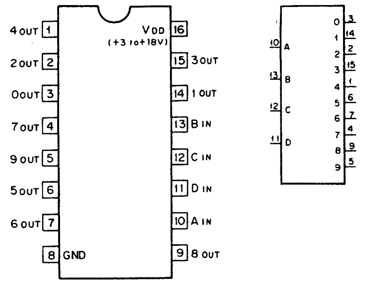
$Y = A\cdot B = \overline{\overline{A}+\overline{B}}$

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

0; LOW LEVEL
1; HIGH LEVEL

IC11	E-3
IC12	B-2
IC13	B-2
IC14	A-1
IC15	A-2
IC16	A-2
IC17	A-3
IC18	C-3
IC19	C-3
IC20	F-3
IC21	F-3
IC22	B-1
IC23	F-3
IC24	F-3
IC25	B-3
IC26	C-2
Q1	E-2
Q2	G-3
Q3	D-3
Q4	D-3
Q5	E-1
Q6	F-1
Q7	D-1
Q8	D-1
Q9	C-3
Q10	C-3
Q11	C-3
Q12	C-3
Q13	C-3
Q14	C-3
Q15	C-3
Q16	C-2
Q17	C-2
Q19	F-3
Q20	F-3
Q21	F-3
Q22	F-3
RV1	C-2
RV2	D-2
RV3	B-2
RY1	E-2
RY2	E-3
RY3	E-3
RY4	E-3
S1	D-2
S2	D-2
S3	B-2
S4	B-2
TP1	D-3
TP2	F-1
TP3	E-1
X1	G-3

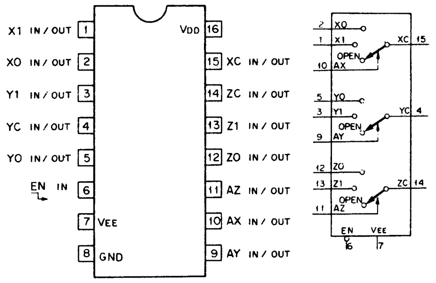
TC4028BP (TOSHIBA)
C-MOS BCD TO DECIMAL DECODER
— TOP VIEW —


4 OUT 1
2 OUT 2
0 OUT 3
7 OUT 4
9 OUT 5
5 OUT 6
6 OUT 7
8 GND
VDD (+3 to +18V) 16
15 3 OUT
14 1 OUT
13 B IN
12 C IN
11 D IN
10 A IN
9 8 OUT
A
B
C
D
0 1 2 3 4 5 6 7 8 9

STATE	INPUTS				OUTPUTS									
	D	C	B	A	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
1	0	0	0	1	0	1	0	0	0	0	0	0	0	0
2	0	0	1	0	0	0	1	0	0	0	0	0	0	0
3	0	0	1	1	0	0	0	1	0	0	0	0	0	0
4	0	1	0	0	0	0	0	0	1	0	0	0	0	0
5	0	1	0	1	0	0	0	0	0	1	0	0	0	0
6	0	1	1	0	0	0	0	0	0	0	1	0	0	0
7	0	1	1	1	0	0	0	0	0	0	0	1	0	0
8	1	X	X	0	0	0	0	0	0	0	0	0	1	0
9	1	X	X	1	0	0	0	0	0	0	0	0	0	1

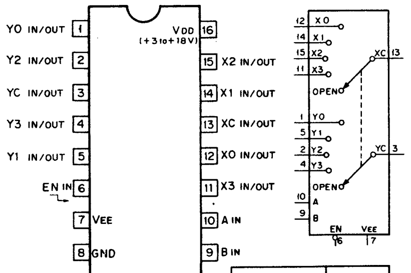
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TC4053BP (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER
—TOP VIEW—


X1 IN/OUT 1
X0 IN/OUT 2
Y1 IN/OUT 3
YC IN/OUT 4
Y0 IN/OUT 5
EN IN 6
7 VEE
8 GND
VDD 16
15 XC IN/OUT
14 ZC IN/OUT
13 Z1 IN/OUT
12 Z0 IN/OUT
11 AZ IN/OUT
10 AX IN/OUT
9 AY IN/OUT
X0
X1
AX
OPEN
XC
Y0
Y1
AY
YC
Z0
Z1
AZ
ZC
EN
VEE

CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z)	
L	L	0
L	H	1
H	X	OPEN

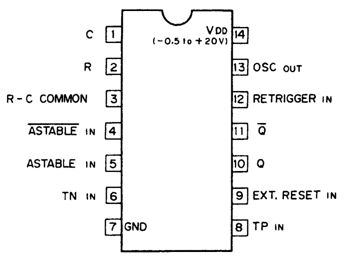
TC4052BP (TOSHIBA)
C-MOS 4-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —

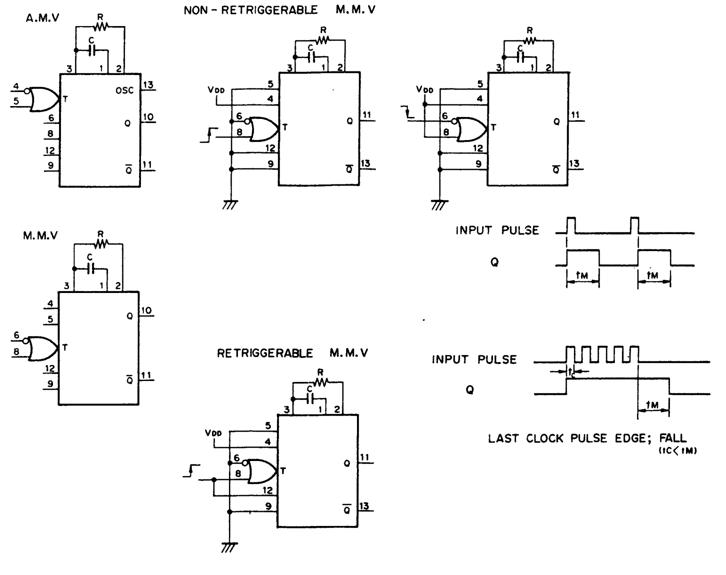

Y0 IN/OUT 1
Y2 IN/OUT 2
YC IN/OUT 3
Y3 IN/OUT 4
Y1 IN/OUT 5
EN IN 6
7 VEE
8 GND
VDD (+3 to +18V) 16
15 X2 IN/OUT
14 X1 IN/OUT
13 XC IN/OUT
12 X0 IN/OUT
11 X3 IN/OUT
10 A IN
9 B IN
X0
X1
X2
X3
XC
OPEN
Y0
Y1
Y2
Y3
YC
OPEN
A
B
EN
VEE

CONTROL INPUTS			"ON" CHANNEL
EN	B	A	
0	0	0	0
0	0	1	1
0	1	0	2
0	1	1	3
1	X	X	OPEN

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE.

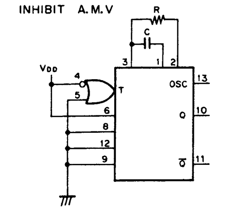
TC4047BP (TOSHIBA)
C-MOS MONOSTABLE/ASTABLE MULTIVIBRATOR
— TOP VIEW —


C 1
R 2
R-C COMMON 3
ASTABLE IN 4
ASTABLE IN 5
TN IN 6
7 GND
VDD (-0.5 to +20V) 14
13 OSC OUT
12 RETRIGGER IN
11 Q̄
10 Q
9 EXT. RESET IN
8 TP IN


A.M.V
M.M.V
NON-RETRIGGERABLE M.M.V
RETRIGGERABLE M.M.V
R
C
VDD
OSC
T
Q
Q̄
INPUT PULSE
Q
tM
tM
tC
tM
LAST CLOCK PULSE EDGE; FALL
(tC < tM)

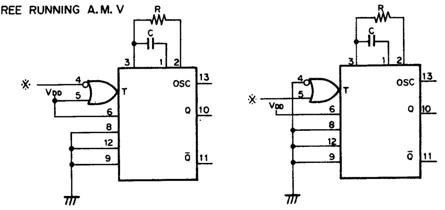
OUTPUT PULSE WIDTH tM = 2.48RC

INHIBIT A.M.V


R
C
VDD
OSC
T
Q
Q̄

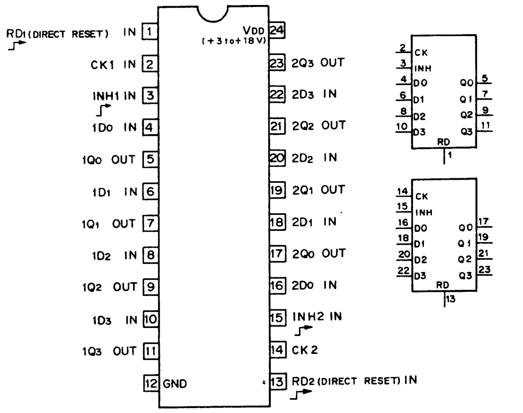
OUTPUTS PULSE WIDTH
Q, Q̄; T = 4.40RC
OSC; T = 2.20RC

FREE RUNNING A.M.V


R
C
VDD
OSC
T
Q
Q̄
*
*

* THE INPUT PULSE IS NOT CONCERNED WITH "H" AND "L"

TC4508BP (TOSHIBA)
C-MOS 4-BIT LATCH
— TOP VIEW —

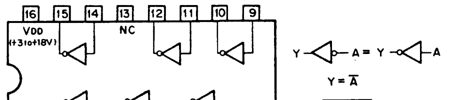

RD1 (DIRECT RESET) IN 1
CK1 IN 2
INH1 IN 3
1D0 IN 4
1Q0 OUT 5
1D1 IN 6
1Q1 OUT 7
1D2 IN 8
1Q2 OUT 9
1D3 IN 10
1Q3 OUT 11
12 GND
VDD (+3 to +18V) 24
23 2Q3 OUT
22 2D3 IN
21 2Q2 OUT
20 2D2 IN
19 2Q1 OUT
18 2D1 IN
17 2Q0 OUT
16 2D0 IN
15 INH2 IN
14 CK2
13 RD2 (DIRECT RESET) IN
CK
INH
D0
D1
D2
D3
Q0
Q1
Q2
Q3
RD

1 STAGE

INPUTS							OUTPUTS			
RD	CK	INH	D3	D2	D1	D0	Q3	Q2	Q1	Q0
0	1	0	0	0	0	0	0	0	0	0
0	1	0	0	0	0	1	0	0	0	1
0	1	0	0	0	1	0	0	0	1	0
0	1	0	0	1	0	0	0	1	0	0
0	1	0	1	0	0	0	1	0	0	0
0	0	0	X	X	X	X	LATCHED			
1	X	0	X	X	X	X	0	0	0	0
X	X	1	X	X	X	X	OPEN			

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

TC5020BP (TOSHIBA)
C-MOS LOW-TO-HIGH VOLTAGE TRANSLATION INVERTER
— TOP VIEW —

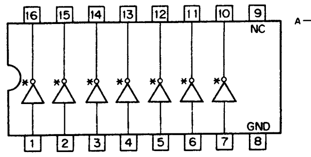

16 15 14 13 12 11 10 9
VDD (+3 to +18V)
NC
Vcc (Vcc ≦ VDD)
GND
1 2 3 4 5 6 7 8
Y
A
Y
A

Y = Ā

A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL

TD62105P (TOSHIBA)
TTL INVERTING DRIVER WITH OPEN COLLECTOR
— TOP VIEW —


16 15 14 13 12 11 10 9
NC
GND
1 2 3 4 5 6 7 8
A Y A Y

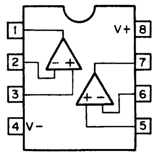
Y = Ā

A	Y
0	1
1	0

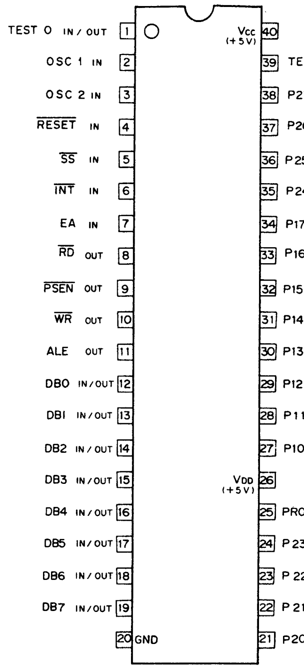
0 ; LOW LEVEL
1 ; HIGH LEVEL

* OPEN COLLECTOR

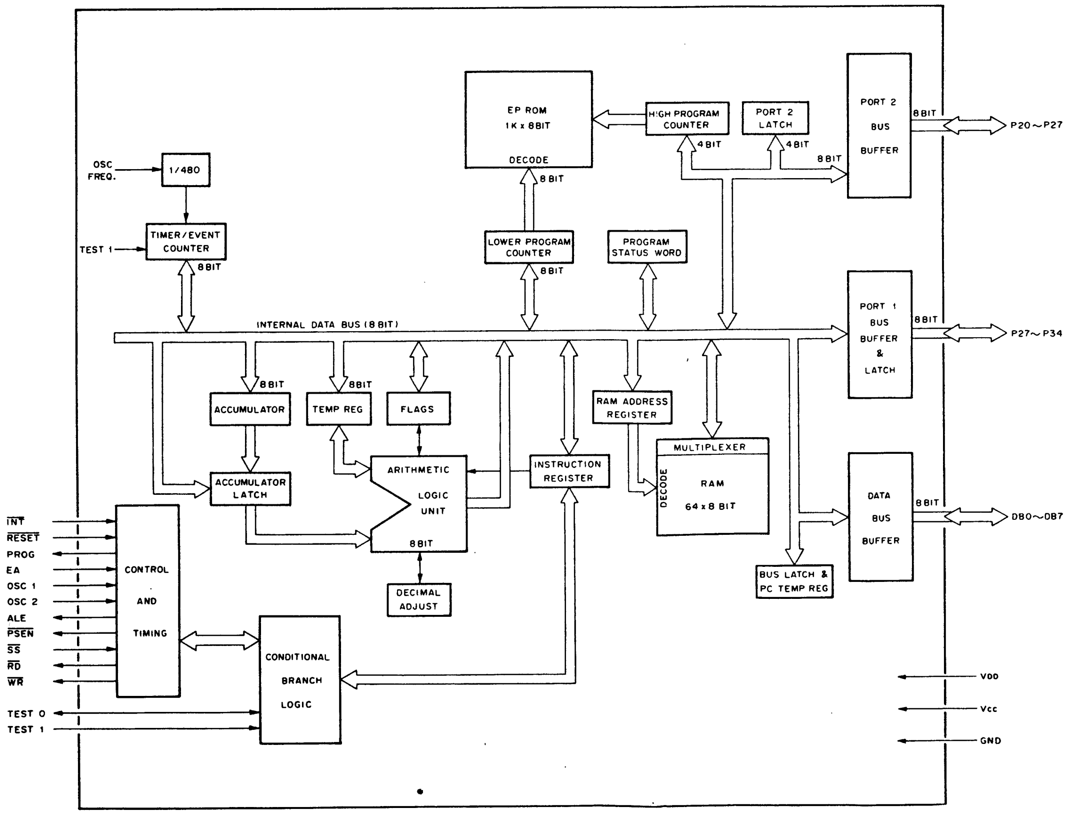
TL062CP (TI)
TL062ACP (TI)
TL062CNS (TI)
OPERATIONAL AMPLIFIER
(JFET INPUT)
—TOP VIEW—


1
2
3
4 V−
V+ 8
7
6
5

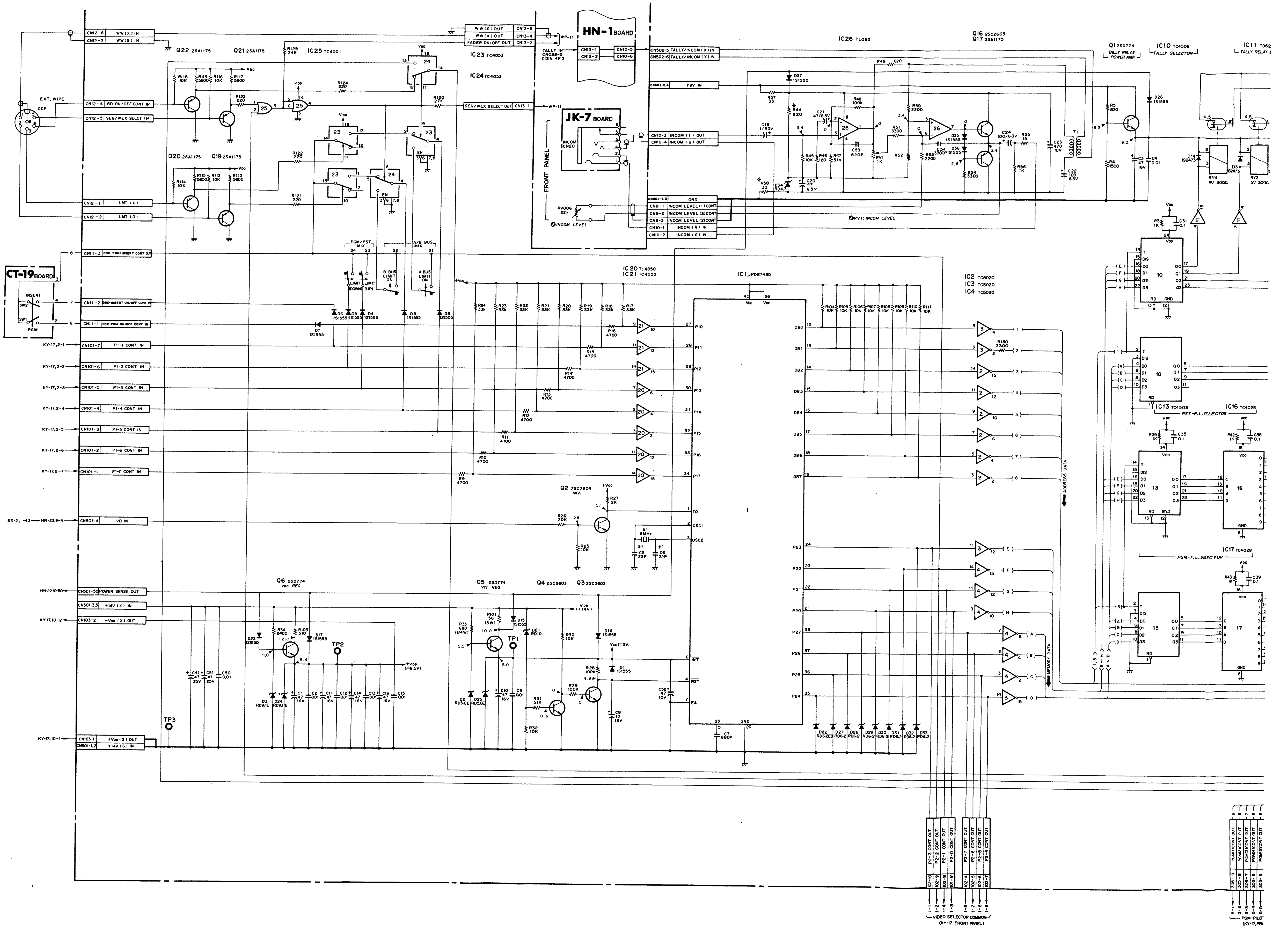
uPD8748D (NEC)
N-MOS 8-BIT MICROPROCESSOR
— TOP VIEW —

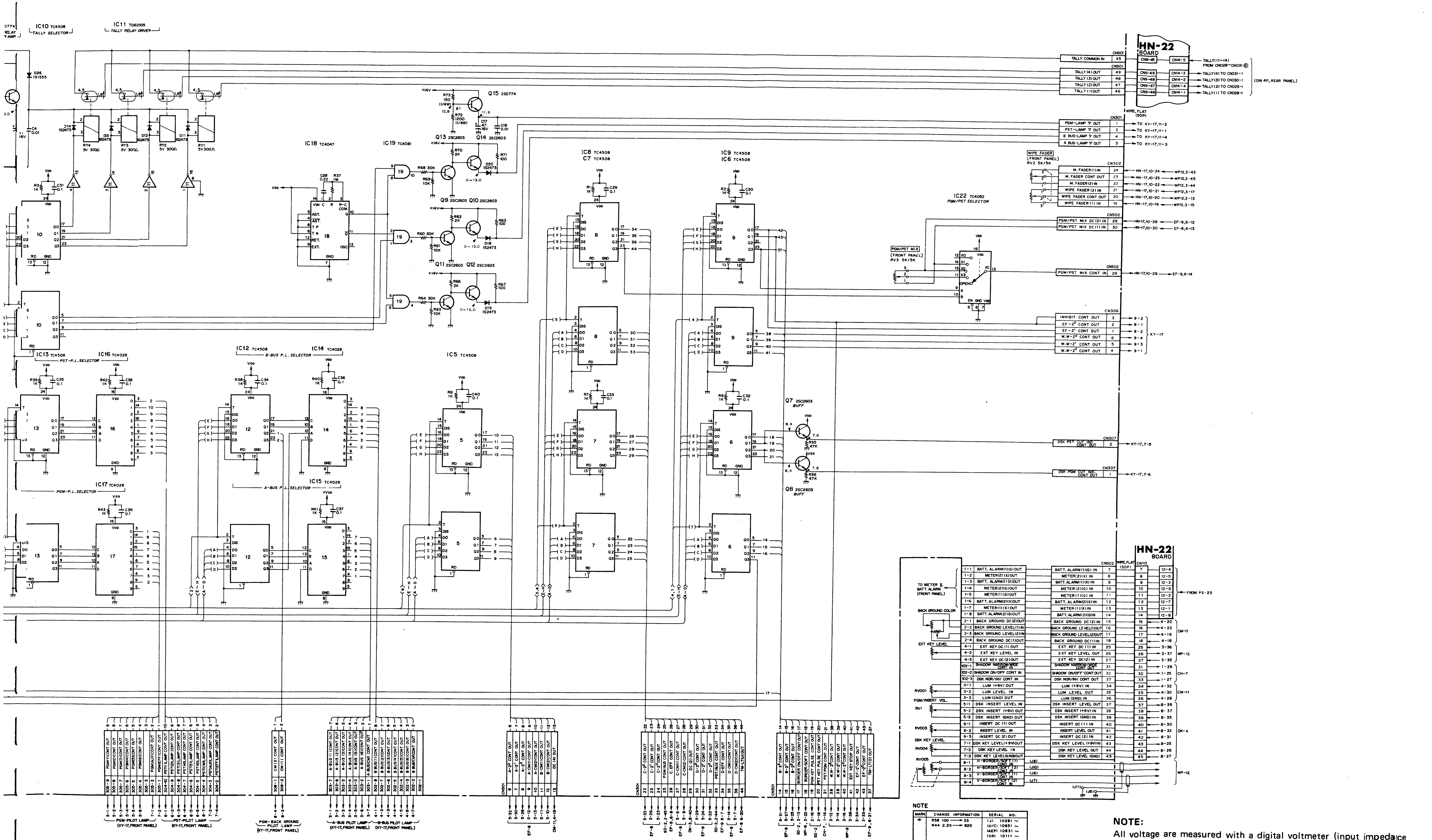

TEST 0 IN/OUT 1
OSC 1 IN 2
OSC 2 IN 3
RESET IN 4
SS IN 5
INT IN 6
EA IN 7
RD OUT 8
PSEN OUT 9
WR OUT 10
ALE OUT 11
DB0 IN/OUT 12
DB1 IN/OUT 13
DB2 IN/OUT 14
DB3 IN/OUT 15
DB4 IN/OUT 16
DB5 IN/OUT 17
DB6 IN/OUT 18
DB7 IN/OUT 19
20 GND
Vcc (+5V) 40
39 TEST 1 IN
38 P27 IN/OUT
37 P26 IN/OUT
36 P25 IN/OUT
35 P24 IN/OUT
34 P17 IN/OUT
33 P16 IN/OUT
32 P15 IN/OUT
31 P14 IN/OUT
30 P13 IN/OUT
29 P12 IN/OUT
28 P11 IN/OUT
27 P10 IN/OUT
VDD (+5V) 26
25 PROG IN/OUT
24 P23 IN/OUT
23 P22 IN/OUT
22 P21 IN/OUT
21 P20 IN/OUT

ALE; ADDRESS LATCH ENABLE
PSEN; PROGRAM STORE ENABLE
SS; SINGLE STEP
EA; EXTERNAL ACCESS
PROG; PROGRAM PULSE
RD; READ
WR; WRITE


EP ROM
1K x 8BIT
DECODE
HIGH PROGRAM COUNTER
PORT 2 LATCH
PORT 2 BUS BUFFER
8BIT
P20~P27
4BIT
4BIT
8BIT
OSC FREQ.
1/480
TIMER/EVENT COUNTER
TEST 1
8BIT
LOWER PROGRAM COUNTER
8BIT
PROGRAM STATUS WORD
INTERNAL DATA BUS (8 BIT)
PORT 1 BUS BUFFER & LATCH
8BIT
P27~P34
8BIT
8BIT
ACCUMULATOR
TEMP REG
FLAGS
RAM ADDRESS REGISTER
MULTIPLEXER
ACCUMULATOR LATCH
ARITHMETIC LOGIC UNIT
8BIT
INSTRUCTION REGISTER
DECODE
RAM 64 x 8 BIT
DATA BUS BUFFER
8BIT
DB0~DB7
DECIMAL ADJUST
BUS LATCH & PC TEMP REG
INT
RESET
PROG
EA
OSC 1
OSC 2
ALE
PSEN
SS
RD
WR
CONTROL AND TIMING
CONDITIONAL BRANCH LOGIC
TEST 0
TEST 1
VDD
Vcc
GND

KY-42 BOARD (CONTROL SYSTEM-2)


HN-1 BOARD
JK-7 BOARD
CT-19 BOARD
FRONT PANEL
EXT. WIPE
CCF
CN12-6 WW(X) IN
CN12-3 WW(G) IN
CN12-4 BD ON/OFF CONT IN
CN12-5 SEG/WEX SELCT IN
CN12-1 LMT (U)
CN12-2 LMT (D)
CN11-3 DSK-PGM/INSERT CONT OUT
CN11-2 DSK-INSERT ON/OFF CONT IN
CN11-1 DSK-PGM ON/OFF CONT IN
CN101-7 P1-1 CONT IN
CN101-6 P1-2 CONT IN
CN101-5 P1-3 CONT IN
CN101-4 P1-4 CONT IN
CN101-3 P1-5 CONT IN
CN101-2 P1-6 CONT IN
CN101-1 P1-7 CONT IN
CN501-4 VD IN
CN501-5 POWER SENSE OUT
CN501-3,5 +14V (X) IN
CN103-2 +VDD (X) OUT
CN103-1 +VDD (G) OUT
CN501-1,2 +14V (G) IN
WW(G) OUT CN13-3
WW(X) OUT CN13-4
FADER ON/OFF OUT CN13-2
SEG/WEX SELECT OUT CN13-1
TALLY IN CN028-2 (DIN 4P)
CN502-5 TALLY/INCOM (X) IN
CN502-6 TALLY/INCOM (Y) IN
CN502-2,4 +9V IN
CN10-3 INCOM (T) OUT
CN10-4 INCOM (G) OUT
INCOM CN20
RV006 22k
INCOM LEVEL
CN502-1,3 GND
CN9-1 INCOM LEVEL (1) CONT
CN9-2 INCOM LEVEL (3) CONT
CN9-3 INCOM LEVEL (2) CONT
CN10-1 INCOM (R) IN
CN10-2 INCOM (G) IN
RV1: INCOM LEVEL
Q22 2SA1175
Q21 2SA1175
Q20 2SA1175
Q19 2SA1175
IC25 TC4001
IC23 TC4053
IC24 TC4053
IC26 TL062
Q16 2SC2603
Q17 2SA1175
Q1 2SD774 TALLY RELAY POWER AMP
IC10 TC4508 TALLY SELECTOR
IC11 TC62 TALLY RELAY
PGM/PST MIX S4 S3
A/B BUS MIX S2 S1
LIMIT (DOWN) LIMIT (UP)
B BUS LIMIT ON
A BUS LIMIT ON
INSERT SW2
PGM SW1
IC20 TC4050
IC21 TC4050
IC1 µPD8748D
IC2 TC5020
IC3 TC5020
IC4 TC5020
Q2 2SC2603 INV.
X1 6MHz
Q6 2SD774 VDD REG
Q5 2SD774 VCC REG
Q4 2SC2603
Q3 2SC2603
TP1
TP2
TP3
+VDD (8.5V)
VDD (+14V)
VCC (5V)
ADDRESS DATA
MEMORY DATA
IC13 TC4508 PST-P.L.SELECTOR
IC16 TC4028
IC17 TC4028 PGM-P.L.SELECTOR
RY4 5V 300Ω
RY3 5V 300Ω
T1
P2-3 CONT OUT
P2-2 CONT OUT
P2-1 CONT OUT
P2-0 CONT OUT
P2-7 CONT OUT
P2-6 CONT OUT
P2-5 CONT OUT
P2-4 CONT OUT
VIDEO SELECTOR COMMON (KY-17 FRONT PANEL)
PGM1 CONT OUT
PGM2 CONT OUT
PGM3 CONT OUT
PGM4 CONT OUT
PGM5 CONT OUT
PGM-PILOT (KY-17, FRONT)

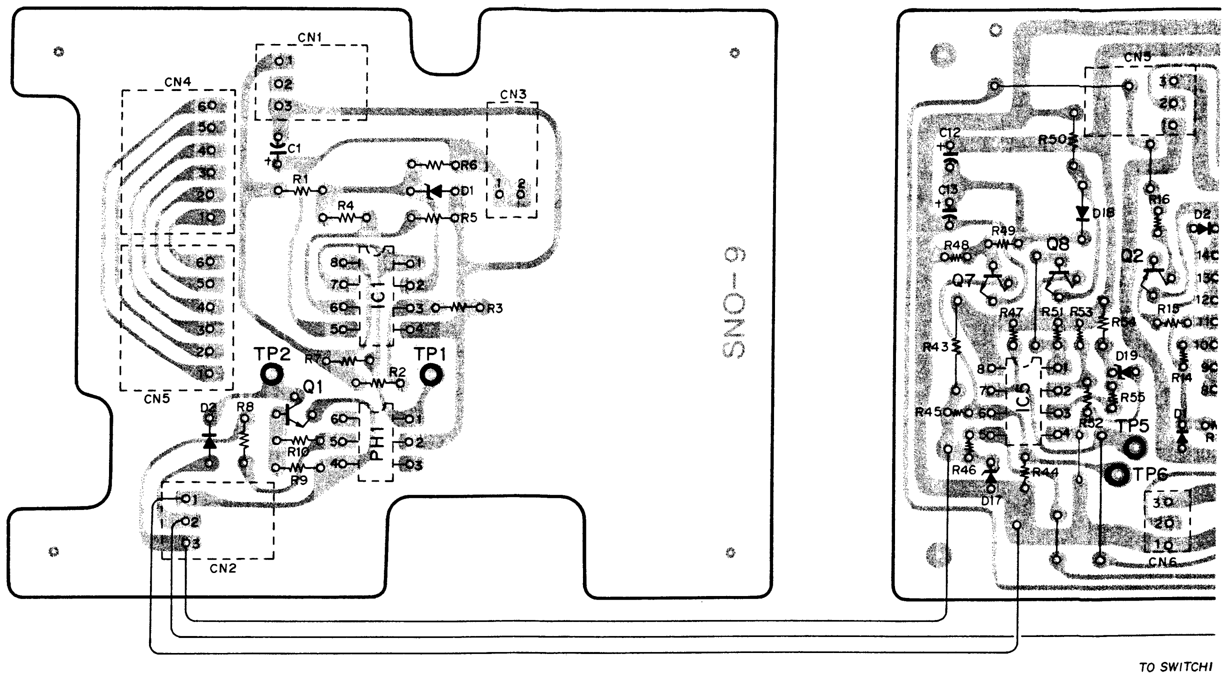

IC10 TC4508
TALLY SELECTOR
IC11 TD62105
TALLY RELAY DRIVER
D26 1S1555
RY4 5V 300Ω
RY3 5V 300Ω
RY2 5V 300Ω
RY1 5V300Ω
IC18 TC4047
IC19 TC4081
Q15 2SD774
Q13 2SC2603
Q14 2SC2603
Q9 2SC2603
Q10 2SC2603
Q11 2SC2603
Q12 2SC2603
IC8 TC4508
IC7 TC4508
IC9 TC4508
IC6 TC4508
IC5 TC4508
IC13 TC4508
PST-P.L.SELECTOR
IC16 TC4028
IC12 TC4508
B-BUS P.L.SELECTOR
IC14 TC4028
A-BUS P.L.SELECTOR
IC15 TC4028
IC17 TC4028
PGM-P.L.SELECTOR
IC22 TC4052
PGM/PST SELECTOR
PGM/PST MIX (FRONT PANEL) RV3 5K/5K
WIPE FADER (FRONT PANEL) RV2 5K/5K
Q7 2SC2603 BUFF
Q8 2SC2603 BUFF
HN-22 BOARD
TALLY COMMON IN
TALLY (4) OUT
TALLY (3) OUT
TALLY (2) OUT
TALLY (1) OUT
TALLY(1)~(4) FROM CN028~CN031
TALLY(4) TO CN031-1
TALLY(3) TO CN030-1
TALLY(2) TO CN029-1
TALLY(1) TO CN028-1
(DIN 4P, REAR PANEL)
WIRE, FLAT (50P)
PGM-LAMP ∇ OUT
PST-LAMP ∇ OUT
B BUS-LAMP ∇ OUT
A BUS-LAMP ∇ OUT
TO KY-17,11-2
TO KY-17,11-1
TO KY-17,11-4
TO KY-17,11-3
M. FADER(1) IN
M. FADER CONT OUT
M. FADER(2) IN
WIPE FADER(2) IN
WIPE FADER CONT OUT
WIPE FADER (1) IN
PGM/PST MIX DC(2) IN
PGM/PST MIX DC(1) IN
PGM/PST MIX CONT IN
INHIBIT CONT OUT
EF-2⁰ CONT OUT
EF-2¹ CONT OUT
W.W-2⁰ CONT OUT
W.W-2¹ CONT OUT
W.W-2² CONT OUT
DSK PST CUT INH. CONT OUT
DSK PGM CUT INH. CONT OUT
TO METER & BATT. ALARM (FRONT PANEL)
BACK GROUND COLOR
EXT KEY LEVEL
PGM/INSERT VOL.
DSK KEY LEVEL
RV001
RV1
RV003
RV004
RV005
BATT. ALARM(1)(G) OUT
METER(2)(X) OUT
BATT. ALARM(1)(X) OUT
METER(2)(G) OUT
METER(1)(G) OUT
BATT. ALARM(2)(X) OUT
METER(1)(X) OUT
BATT. ALARM(2)(G) OUT
BACK GROUND DC(2) OUT
BACK GROUND LEVEL(1) IN
BACK GROUND LEVEL(2) IN
BACK GROUND DC(1) OUT
EXT KEY DC (1) OUT
EXT KEY LEVEL IN
EXT KEY DC (2) OUT
SHADOW NARROW/WIDE CONT IN
SHADOW ON/OFF CONT IN
DSK NOR/INV CONT IN
LUM (+9V) OUT
LUM LEVEL IN
LUM (GND) OUT
DSK INSERT LEVEL IN
DSK INSERT (+9V) OUT
DSK INSERT (GND) OUT
INSERT DC (1) OUT
INSERT LEVEL IN
INSERT DC (2) OUT
DSK KEY LEVEL(+9V) OUT
DSK KEY LEVEL IN
DSK KEY LEVEL(GND) OUT
H-BORDER/SOFT (1) CONT IN
H-BORDER/SOFT (2) CONT IN
V-BORDER/SOFT (1) CONT IN
V-BORDER/SOFT (2) CONT IN
FROM PS-25
CM-11
WP-12
CH-7
DK-4
PGM-PILOT LAMP (KY-17, FRONT PANEL)
PST-PILOT LAMP (KY-17, FRONT PANEL)
PGM-BACK GROUND PILOT LAMP (KY-17, FRONT PANEL)
A-BUS PILOT LAMP (KY-17, FRONT PANEL)
B-BUS PILOT LAMP (KY-17, FRONT PANEL)
CN501
CN502
CN301
CN306
CN307
CN10

NOTE

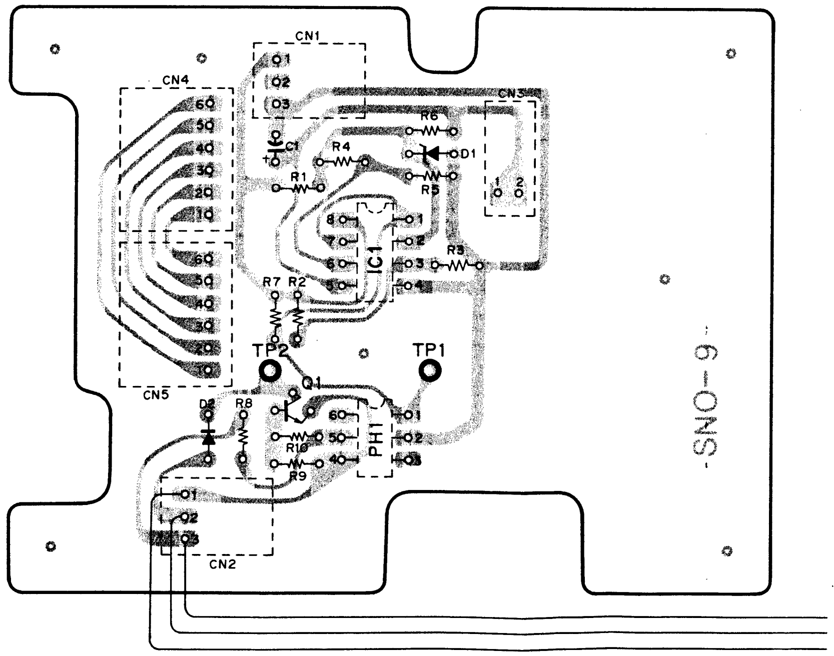
MARK	CHANGE INFORMATION	SERIAL NO.
※	R58 100 → 33 R44 2.2K → 820	(J) 10281 ~ (U/C) 10651 ~ (AEP) 10831 ~ (UK) 10111 ~ (BRZ) 10016 ~
※ 1	C5,6 20P → 22P R72 1300 → 1200	(J) 10441 ~ (U/C) 11261 ~ (AEP) 12821 ~ (UK) 10191 ~ (BRZ) 10046 ~

NOTE:
All voltage are measured with a digital voltmeter (input impedance 10MΩ).

PS-24, PS-25 BOARD
AC-31, AC-31A BOARD

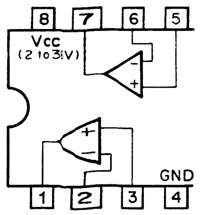

CN1
CN2
CN3
CN4
CN5
CN6
C1
C12
C13
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R14
R15
R16
R43
R44
R45
R46
R47
R48
R49
R50
R51
R52
R53
R54
R55
D1
D2
D17
D18
D19
Q1
Q2
Q7
Q8
IC1
PH1
TP1
TP2
TP5
TP6
SNO-9
TO SWITCHI

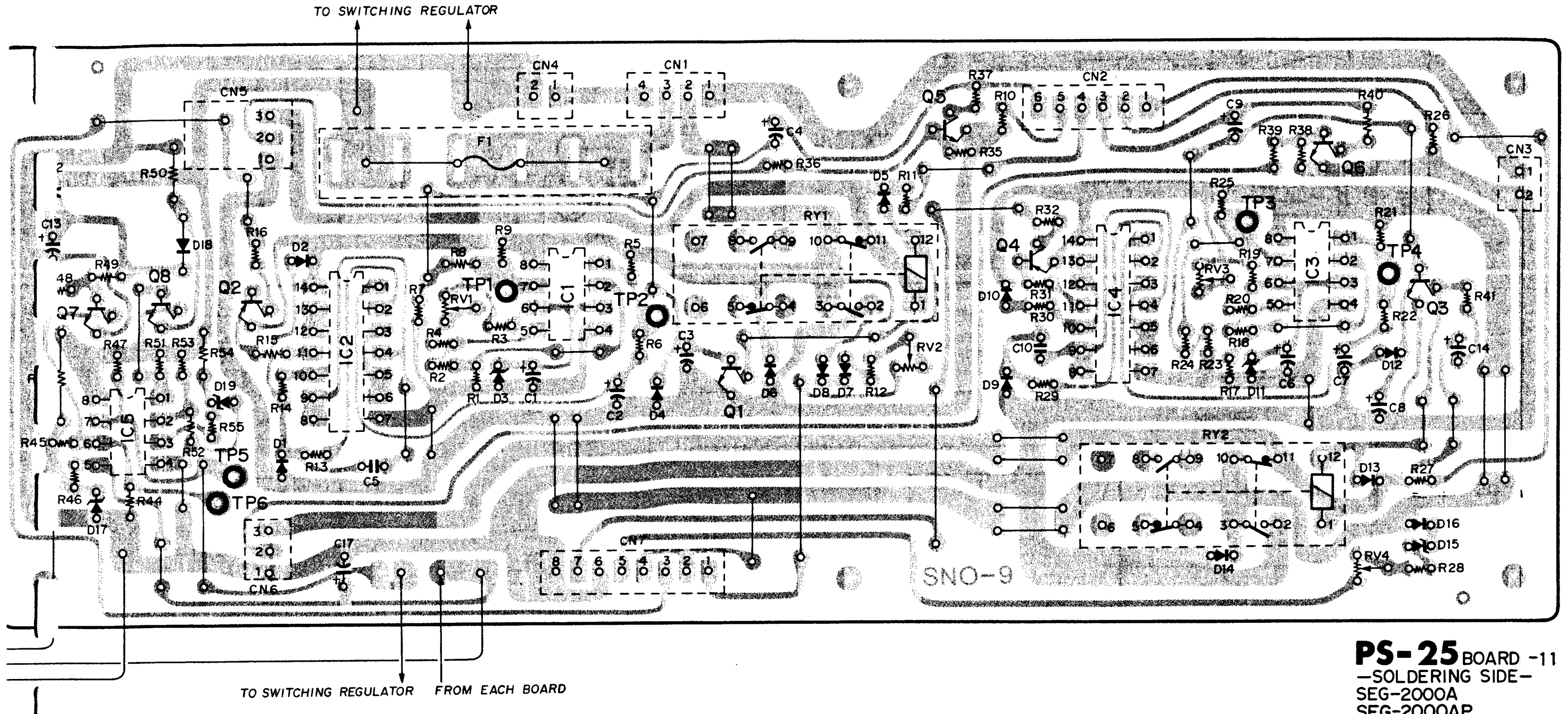
PS-24 BOARD -11
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM


CN1
CN2
CN3
CN4
CN5
C1
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
D1
D2
Q1
IC1
PH1
TP1
TP2
SNO-9

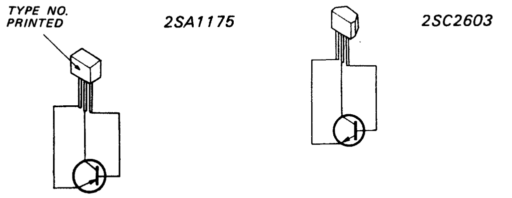
PS-24 BOARD -12
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

NJM2903 D (JRC)
VOLTAGE COMPARATOI
— TOP VIEW —

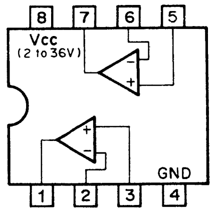

8
7
6
5
Vcc
(2 to 36V)
GND
1
2
3
4


TO SWITCHING REGULATOR
TO SWITCHING REGULATOR
FROM EACH BOARD
CN1
CN2
CN3
CN4
CN5
CN6
CN7
F1
RY1
RY2
IC1
IC2
IC3
IC4
IC5
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
TP1
TP2
TP3
TP4
TP5
TP6
RV1
RV2
RV3
RV4
SNO-9

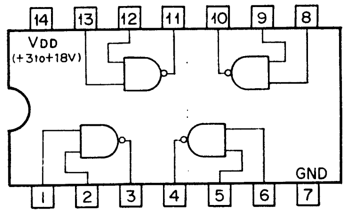
PS-25 BOARD -11
—SOLDERING SIDE—
SEG-2000A
SEG-2000AP
SEG-2000APM

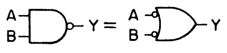

TYPE NO. PRINTED
2SA1175
2SC2603

NJM2903D (JRC)
VOLTAGE COMPARATOR
— TOP VIEW —


8
7
6
5
Vcc
(2 to 36V)
1
2
3
4
GND

TC4011BP (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —

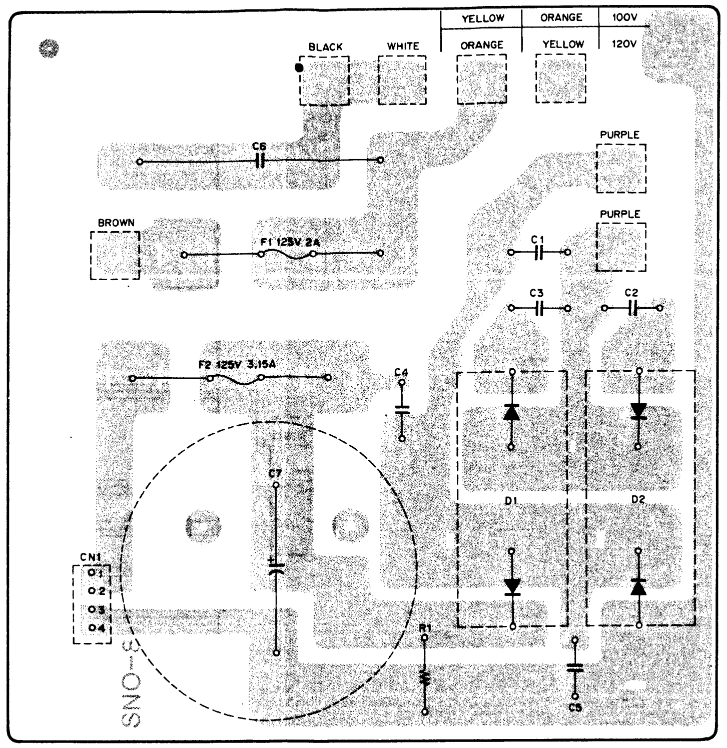

14
13
12
11
10
9
8
VDD
(+3 to +18V)
1
2
3
4
5
6
7
GND



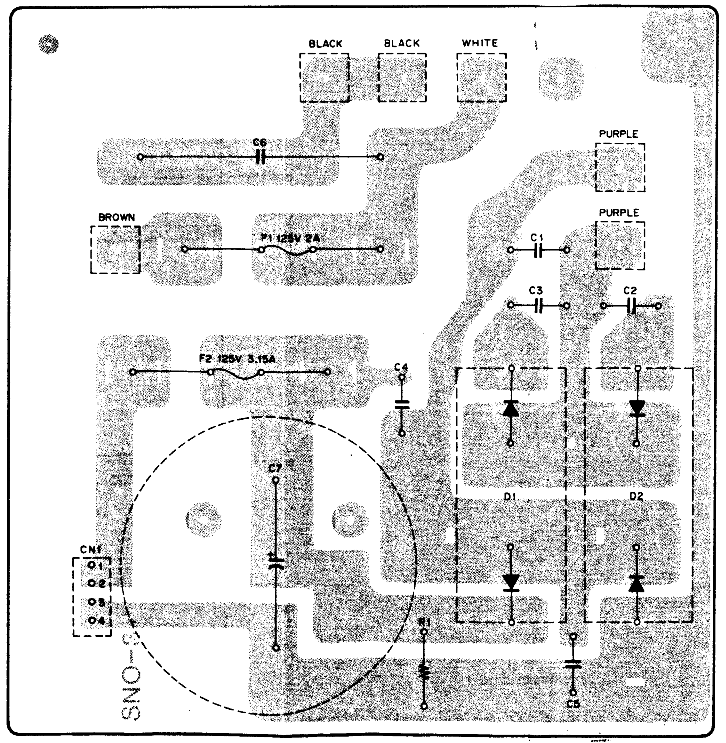
Y = $\overline{A \cdot B}$ = $\overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

0:LOW LEVEL
1:HIGH LEVEL

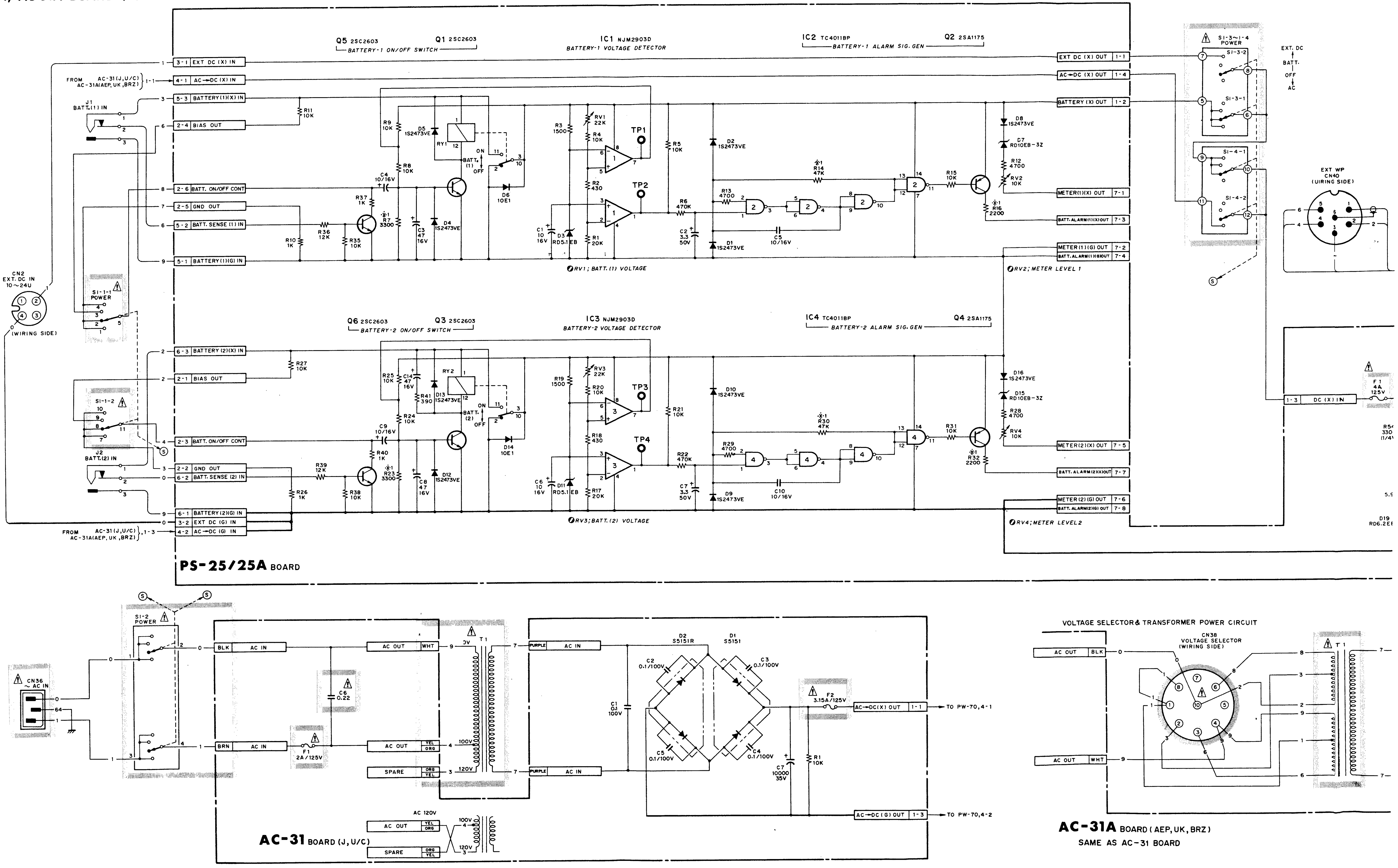

YELLOW
ORANGE
100V
BLACK
WHITE
ORANGE
YELLOW
120V
PURPLE
PURPLE
BROWN
C6
F1 125V 2A
C1
C3
C2
F2 125V 3.15A
C4
C7
D1
D2
CN1
R1
C5
SNO-S

AC-31 BOARD
1-606-078-11,12,13
SEG-2000/2000A


BLACK
BLACK
WHITE
PURPLE
PURPLE
BROWN
C6
F1 125V 2A
C1
C3
C2
F2 125V 3.15A
C4
C7
D1
D2
CN1
R1
C5
SNO-S

AC-31A BOARD
1-606-078-21,22,23
SEG-2000P/2000AP
SEG-2000PM/2000APM

PS-24, PS-25, AC-31, AC-31A BOARD (POWER SUPPLY SYSTEM)



Q5 2SC2603
Q1 2SC2603
BATTERY-1 ON/OFF SWITCH
IC1 NJM2903D
BATTERY-1 VOLTAGE DETECTOR
IC2 TC4011BP
Q2 2SA1175
BATTERY-1 ALARM SIG. GEN
3-1 EXT DC (X) IN
4-1 AC→DC (X) IN
5-3 BATTERY (1)(X) IN
2-4 BIAS OUT
2-6 BATT. ON/OFF CONT
2-5 GND OUT
5-2 BATT. SENSE (1) IN
5-1 BATTERY (1)(G) IN
FROM AC-31 (J, U/C) AC-31A (AEP, UK, BRZ)
J1 BATT. (1) IN
CN2 EXT. DC IN 10～24V
(WIRING SIDE)
S1-1-1 POWER
EXT DC (X) OUT 1-1
AC→DC (X) OUT 1-4
BATTERY (X) OUT 1-2
METER (1)(X) OUT 7-1
BATT. ALARM (1)(X) OUT 7-3
METER (1)(G) OUT 7-2
BATT. ALARM (1)(G) OUT 7-4
RV1; BATT. (1) VOLTAGE
RV2; METER LEVEL 1
TP1
TP2
RY1
BATT. (1)
ON
OFF
S1-3～1-4 POWER
S1-3-2
S1-3-1
S1-4-1
S1-4-2
EXT. DC
BATT.
OFF
AC
EXT WP CN40 (WIRING SIDE)
Q6 2SC2603
Q3 2SC2603
BATTERY-2 ON/OFF SWITCH
IC3 NJM2903D
BATTERY-2 VOLTAGE DETECTOR
IC4 TC4011BP
Q4 2SA1175
BATTERY-2 ALARM SIG. GEN
6-3 BATTERY (2)(X) IN
2-1 BIAS OUT
2-3 BATT. ON/OFF CONT
2-2 GND OUT
6-2 BATT. SENSE (2) IN
6-1 BATTERY (2)(G) IN
3-2 EXT DC (G) IN
4-2 AC→DC (G) IN
S1-1-2
J2 BATT. (2) IN
TP3
TP4
RY2
BATT. (2)
METER (2)(X) OUT 7-5
BATT. ALARM (2)(X) OUT 7-7
METER (2)(G) OUT 7-6
BATT. ALARM (2)(G) OUT 7-8
RV3; BATT. (2) VOLTAGE
RV4; METER LEVEL2
1-3 DC (X) IN
F1 4A 125V
PS-25/25A BOARD
S1-2 POWER
CN36 ～AC IN
BLK AC IN
BRN AC IN
C6 0.22
F1 2A/125V
AC OUT WHT
AC OUT YEL ORG
SPARE ORG YEL
T1
0V
100V
120V
PURPLE AC IN
D2 S5151R
D1 S5151
C2 0.1/100V
C3 0.1/100V
C5 0.1/100V
C4 0.1/100V
C1 0.1 100V
C7 10000 35V
R1 10K
F2 3.15A/125V
AC→DC (X) OUT 1-1
TO PW-70, 4-1
AC→DC (G) OUT 1-3
TO PW-70, 4-2
AC 120V
AC-31 BOARD (J, U/C)
VOLTAGE SELECTOR & TRANSFORMER POWER CIRCUIT
CN38 VOLTAGE SELECTOR (WIRING SIDE)
AC OUT BLK
AC OUT WHT
AC-31A BOARD (AEP, UK, BRZ)
SAME AS AC-31 BOARD

NOTE:

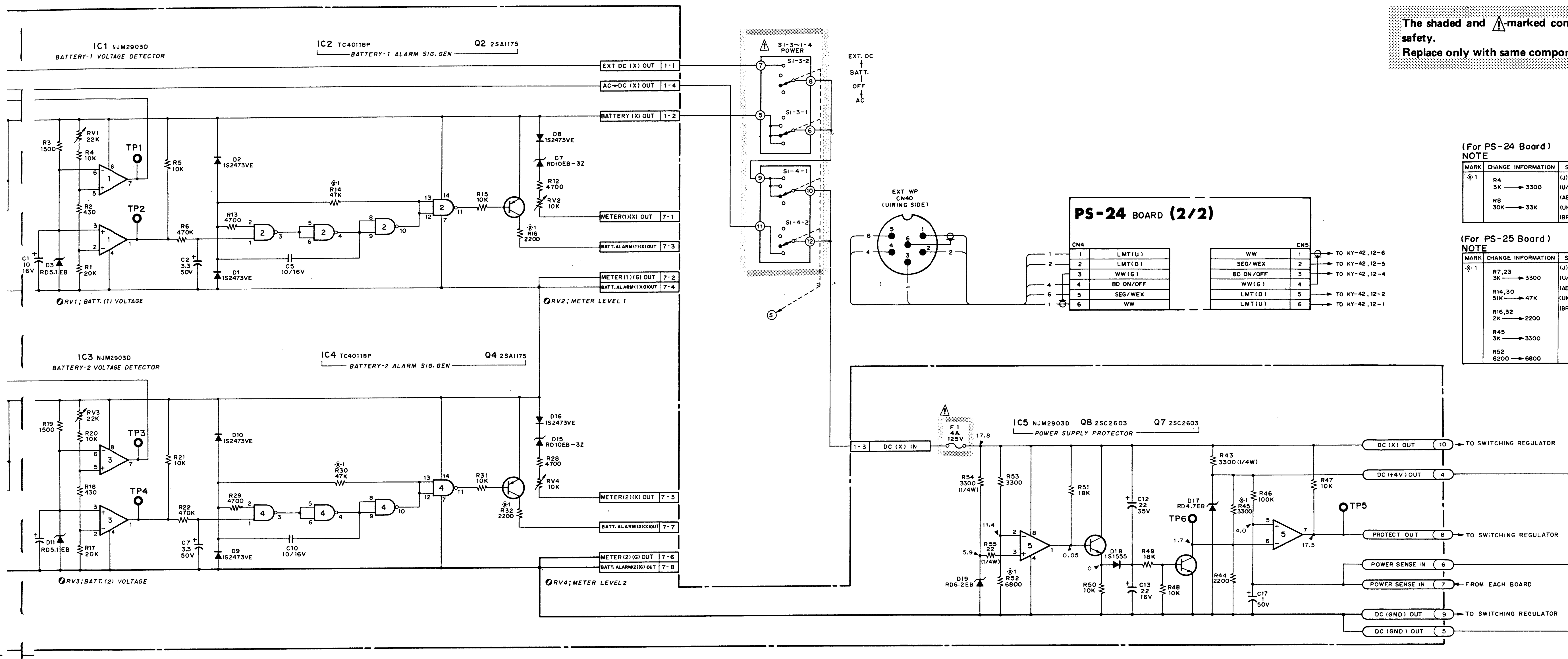
The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

(For PS-24 Board)
NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※1	R4 3K ──► 3300 R8 30K ──► 33K	(J) 10441 ~ (U/C) 11261 ~ (AEP) 12821 ~ (UK) 10191 ~ (BRZ) 10046 ~

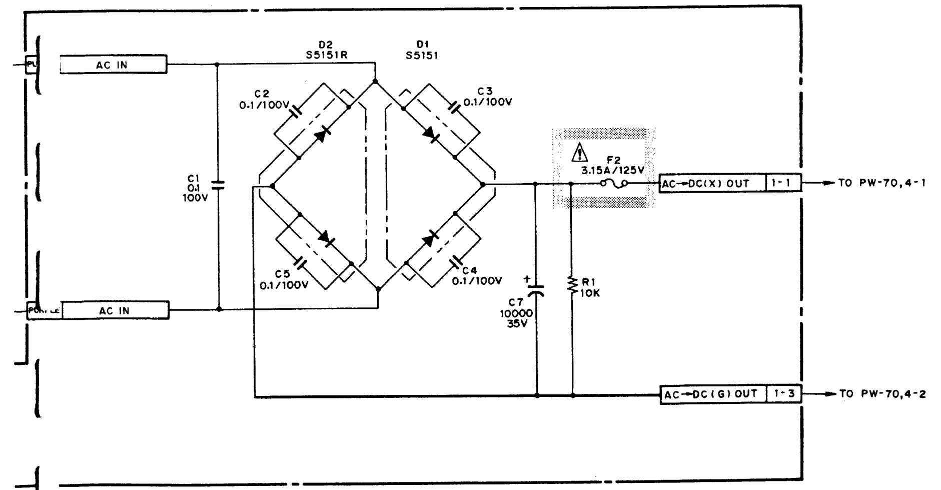
(For PS-25 Board)
NOTE

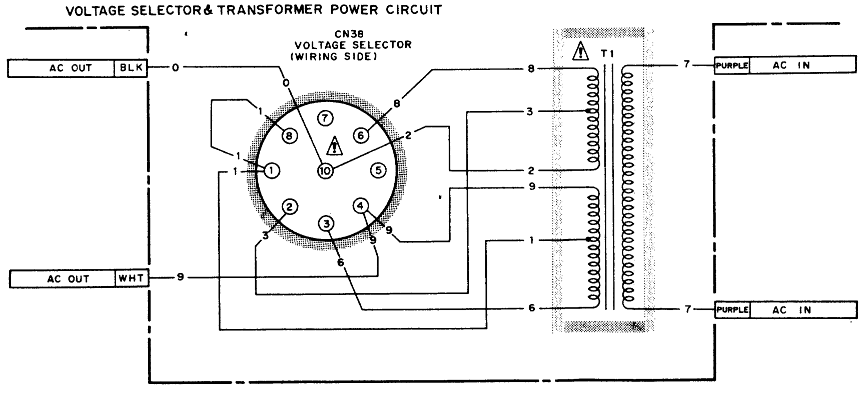
MARK	CHANGE INFORMATION	SERIAL NO.
※1	R7,23 3K ──► 3300 R14,30 51K ──► 47K R16,32 2K ──► 2200 R45 3K ──► 3300 R52 6200 ──► 6800	(J) 10441 ~ (U/C) 11261 ~ (AEP) 12821 ~ (UK) 10191 ~ (BRZ) 10046 ~


IC1 NJM2903D
BATTERY-1 VOLTAGE DETECTOR
IC2 TC4011BP
BATTERY-1 ALARM SIG. GEN
Q2 2SA1175
EXT DC (X) OUT 1-1
AC→DC (X) OUT 1-4
BATTERY (X) OUT 1-2
METER(1)(X) OUT 7-1
BATT. ALARM(1)(X) OUT 7-3
METER(1)(G) OUT 7-2
BATT. ALARM(1)(G) OUT 7-4
RV1; BATT. (1) VOLTAGE
RV2; METER LEVEL 1
IC3 NJM2903D
BATTERY-2 VOLTAGE DETECTOR
IC4 TC4011BP
BATTERY-2 ALARM SIG. GEN
Q4 2SA1175
METER(2)(X) OUT 7-5
BATT. ALARM(2)(X) OUT 7-7
METER(2)(G) OUT 7-6
BATT. ALARM(2)(G) OUT 7-8
RV3; BATT. (2) VOLTAGE
RV4; METER LEVEL2
TP1
TP2
TP3
TP4
S1-3~1-4 POWER
S1-3-2
S1-3-1
S1-4-1
S1-4-2
EXT. DC
BATT.
OFF
AC
EXT WP
CN40
(UIRING SIDE)
PS-24 BOARD (2/2)
CN4
CN5
TO KY-42, 12-6
TO KY-42, 12-5
TO KY-42, 12-4
TO KY-42, 12-2
TO KY-42, 12-1
1-3 DC (X) IN
F1 4A 125V
IC5 NJM2903D
Q8 2SC2603
Q7 2SC2603
POWER SUPPLY PROTECTOR
TP5
TP6
DC (X) OUT 10
DC (+4V) OUT 4
PROTECT OUT 8
POWER SENSE IN 6
POWER SENSE IN 7
DC (GND) OUT 9
DC (GND) OUT 5
TO SWITCHING REGULATOR
TO SWITCHING REGULATOR
FROM EACH BOARD
TO SWITCHING REGULATOR

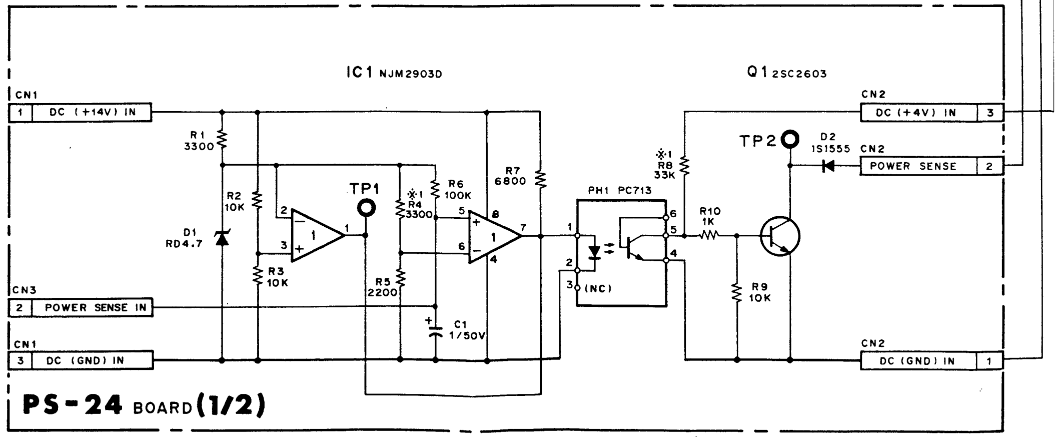
CN4	
1	LMT(U)
2	LMT(D)
3	WW(G)
4	BD ON/OFF
5	SEG/WEX
6	WW

	CN5
WW	1
SEG/WEX	2
BD ON/OFF	3
WW(G)	4
LMT(D)	5
LMT(U)	6


AC IN
AC IN
D2 S5151R
D1 S5151
C1 0.1 100V
C2 0.1/100V
C3 0.1/100V
C4 0.1/100V
C5 0.1/100V
C7 10000 35V
R1 10K
F2 3.15A/125V
AC→DC(X) OUT 1-1
AC→DC(G) OUT 1-3
TO PW-70,4-1
TO PW-70,4-2


VOLTAGE SELECTOR& TRANSFORMER POWER CIRCUIT
CN38
VOLTAGE SELECTOR
(WIRING SIDE)
AC OUT BLK
AC OUT WHT
T1
PURPLE AC IN
PURPLE AC IN

AC-31A BOARD (AEP, UK, BRZ)
SAME AS AC-31 BOARD

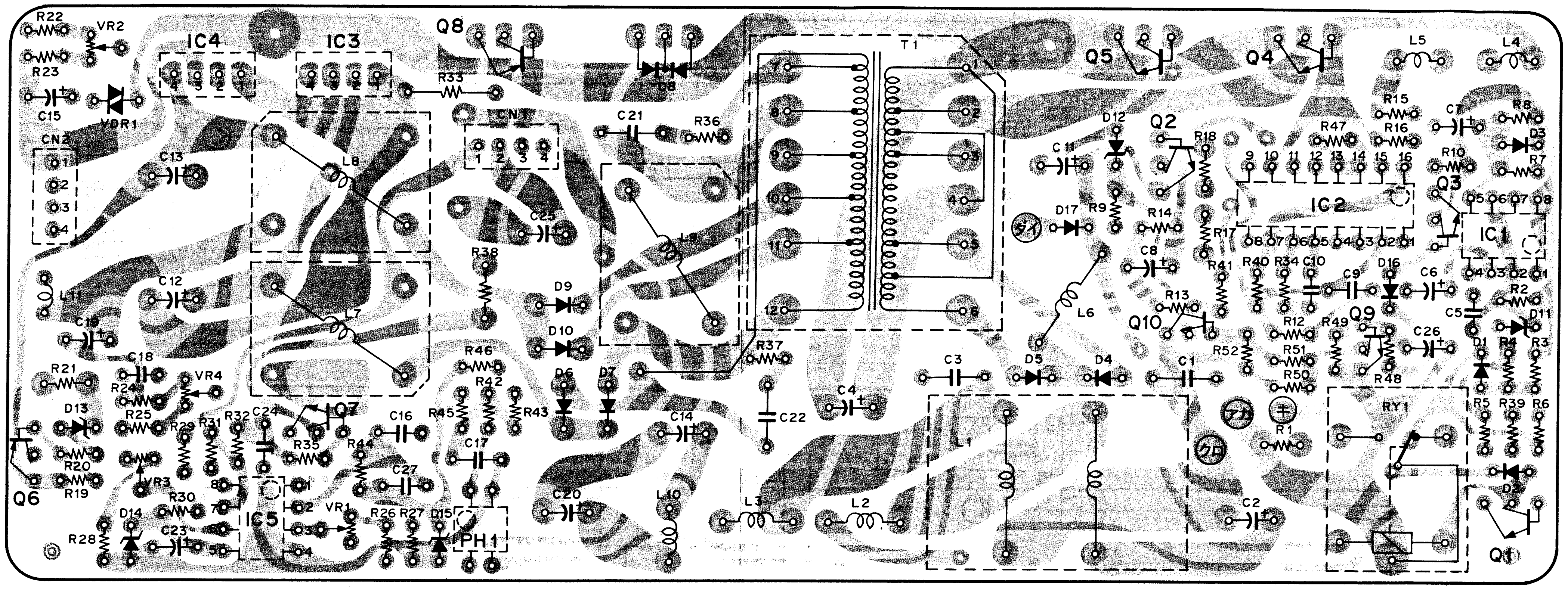

IC1 NJM2903D
Q1 2SC2603
CN1
DC (+14V) IN
CN3
POWER SENSE IN
CN1
DC (GND) IN
CN2
DC (+4V) IN
CN2
POWER SENSE
CN2
DC (GND) IN
TP1
TP2
D1 RD4.7
D2 1S1555
PH1 PC713
(NC)

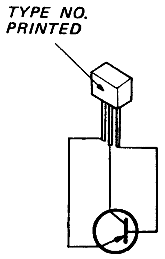
PS-24 BOARD **(1/2)**

NOTE:
All voltage are measured with a digital voltmeter (input impedanc 10MΩ).

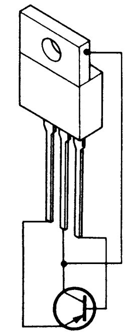
PS-36 BOARD

Serial No. J : Up to 10170
U/C : Up to 10500
AEP : Up to 10380
UK : Up to 10040

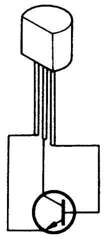

R22
VR2
IC4
IC3
Q8
D8
T1
Q5
Q4
L5
L4
R23
C15
VDR1
R33
CN1
C21
R36
D12
Q2
R18
R15
C7
R8
R47
R16
D3
CN2
C13
L8
C11
R10
R7
Q3
IC2
D17
R9
R14
IC1
C25
L9
C8
R17
R41
R40
R34
C10
C9
D16
C6
R38
L6
R13
R2
L11
C12
D9
Q10
R12
R49
Q9
C5
D11
C19
L7
D10
R52
R51
C26
D1
R4
R3
C18
R46
R37
C3
D5
D4
C1
R50
R48
RY1
R21
VR4
R42
R43
D6
D7
C4
C22
R24
R32
C24
Q7
C16
R45
C14
R1
R5
R39
R6
D13
R25
R29
R31
R35
R44
C17
L1
R20
VR3
C27
C20
L10
D2
Q6
R19
R30
IC5
VR1
R26
R27
D15
PH1
L3
L2
C2
Q1
D14
C23
R28


TYPE NO.
PRINTED

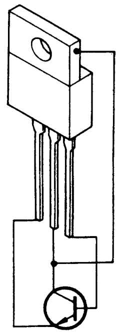
2SA1175



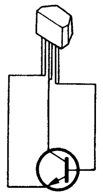
2SB856



2SC1364



2SC2315
2SC2334

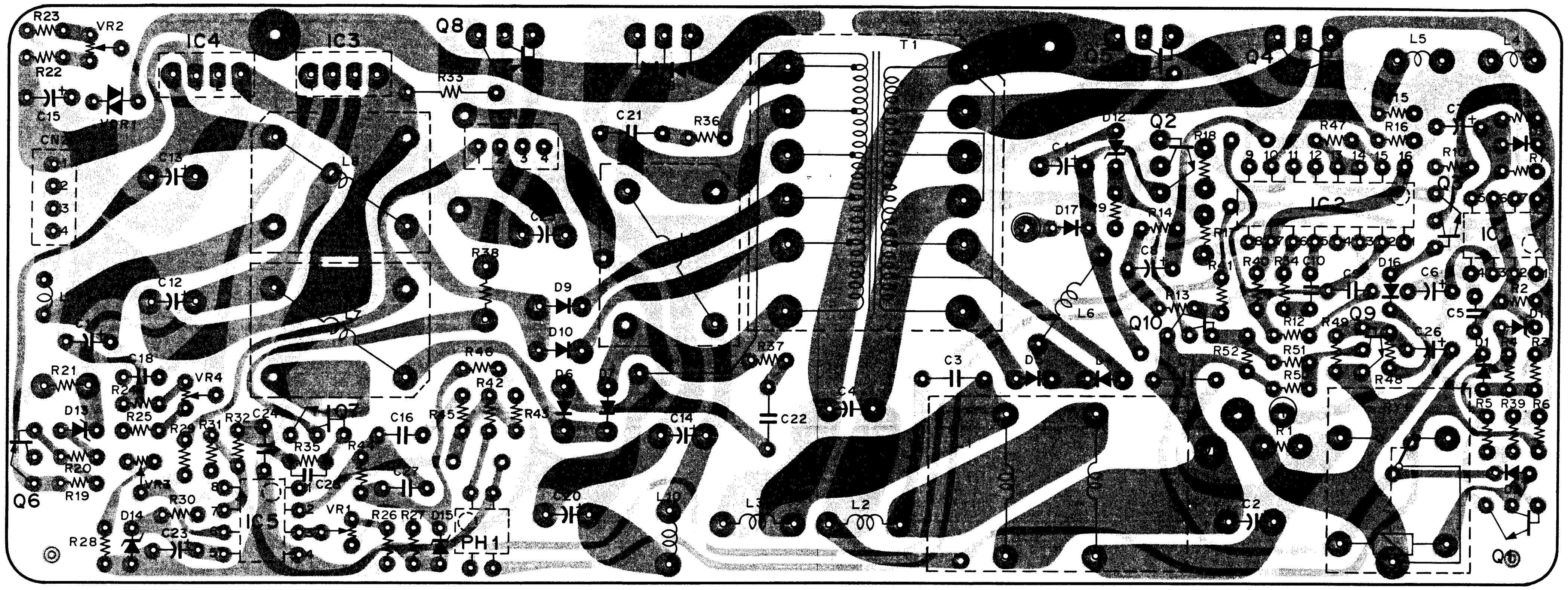


2SC2603

PS-36 BOARD -11
—SOLDERING SIDE—
SEG-2000A
SEG-2000AP
SEG-2000APM

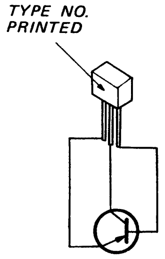
PS-36 BOARD

Serial No. J	: 10171 and higher
U/C	: 10501 and higher
AEP	: 10381 and higher
UK	: 10041 and higher
BRZ	: 10001 and higher

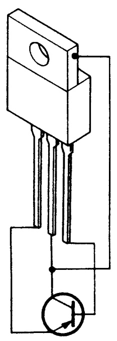

R23
VR2
IC4
IC3
Q8
R22
C15
VDR1
CN2
1
2
3
4
C13
C12
R33
C21
R36
T1
Q5
Q4
L5
L4
D12
Q2
R18
R47
R16
R15
9
10
11
12
13
14
15
16
IC2
D17
R14
R11
R40
R34
C10
D16
C6
C5
L6
R13
Q10
Q9
R12
R49
R51
R52
R50
R48
C26
R5
R39
R6
R1
C2
Q1
D9
D10
R38
D6
R37
C22
C3
C4
C14
R46
R42
R43
R45
C16
C18
R21
D13
R25
R29
R31
R32
C24
VR4
R35
C25
R20
R19
Q6
VR3
R30
D14
C23
R28
IC5
VR1
R26
R27
D15
PH1
C20
L1
L3
L2
8
7
6
5

PS-36 BOARD -12
-SOLDERING SIDE-

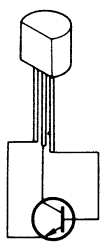
SEG-2000A
SEG-2000AP
SEG-2000APM


TYPE NO.
PRINTED

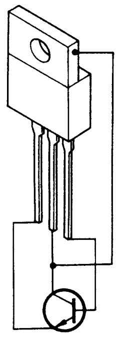
2SA1175



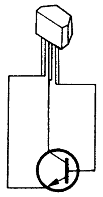
2SB856



2SC1364

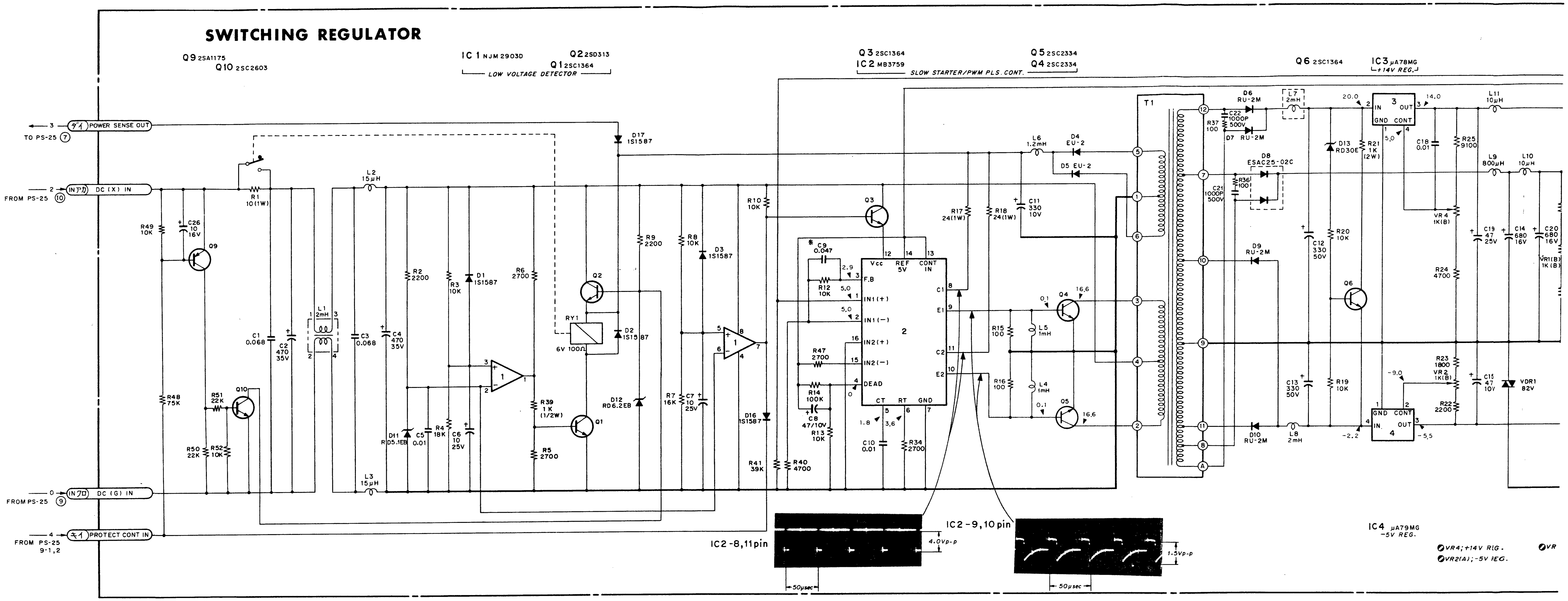


2SC2315
2SC2334

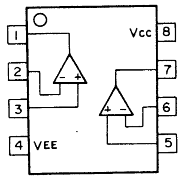


2SC2603

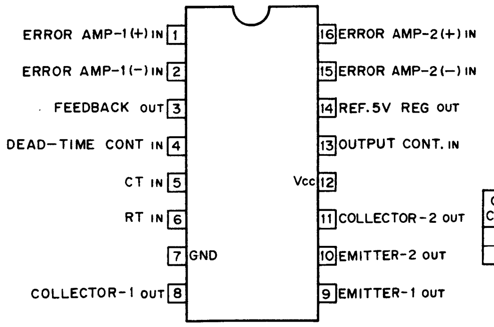
PS-36 BOARD (SWITCHING REGURATOR)

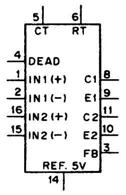

SWITCHING REGULATOR
Q9 2SA1175
Q10 2SC2603
IC1 NJM2903D
Q2 2SD313
Q1 2SC1364
LOW VOLTAGE DETECTOR
Q3 2SC1364
IC2 MB3759
Q5 2SC2334
Q4 2SC2334
SLOW STARTER/PWM PLS. CONT.
Q6 2SC1364
IC3 µA78MG +14V REG.
3 POWER SENSE OUT TO PS-25 ⑦
2 DC (X) IN FROM PS-25 ⑩
0 DC (G) IN FROM PS-25 ⑨
4 PROTECT CONT IN FROM PS-25 9-1,2
R1 10 (1W)
L1 2mH
L2 15µH
L3 15µH
RY1 6V 100Ω
T1
D6 RU-2M
D7 RU-2M
L7 2mH
D8 ESAC25-02C
D9 RU-2M
D10 RU-2M
D13 RD30E
VDR1 82V
IC2-8,11pin
4.0Vp-p
50µsec
IC2-9,10 pin
1.5Vp-p
50µsec
IC4 µA79MG -5V REG.
VR4; +14V REG.
VR2(A); -5V REG.

NJM2903D (JRC)
OPERATIONAL AMPLIFIER
-TOP VIEW-

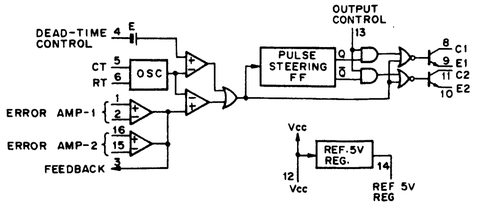

1
2
3
4 VEE
Vcc 8
7
6
5

MB3759 (FUJITSU)
PWM POWER CONTROL
—TOP VIEW—

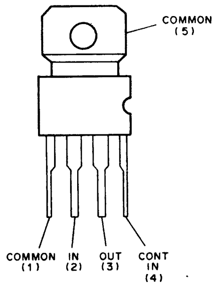

ERROR AMP-1(+)IN 1
ERROR AMP-1(-)IN 2
FEEDBACK OUT 3
DEAD-TIME CONT IN 4
CT IN 5
RT IN 6
7 GND
COLLECTOR-1 OUT 8
16 ERROR AMP-2(+) IN
15 ERROR AMP-2(-) IN
14 REF.5V REG OUT
13 OUTPUT CONT. IN
Vcc 12
11 COLLECTOR-2 OUT
10 EMITTER-2 OUT
9 EMITTER-1 OUT

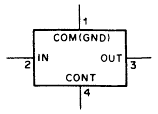

5 6
CT RT
4 DEAD
1 IN1(+)
2 IN1(-)
16 IN2(+)
15 IN2(-)
C1 8
E1 9
C2 11
E2 10
FB 3
REF. 5V 14

OUTPUT CONTROL	OUTPUT FUNCTION
0	PARALLEL
1	PUSH-PULL

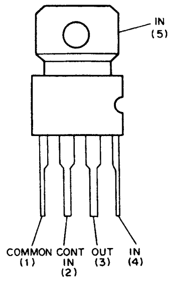

OUTPUT CONTROL
13
DEAD-TIME CONTROL 4
CT 5
RT 6
OSC
ERROR AMP-1 1 2
ERROR AMP-2 16 15
FEEDBACK 3
PULSE STEERING FF
8 C1
9 E1
11 C2
10 E2
Vcc
12 Vcc
REF.5V REG.
14
REF 5V REG

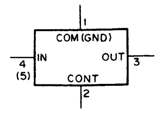
µA78MG (FSC)
FOUR TERMINAL POSITIVE ADJUSTABLE VOLTAGE REGULATOR
—FRONT VIEW—

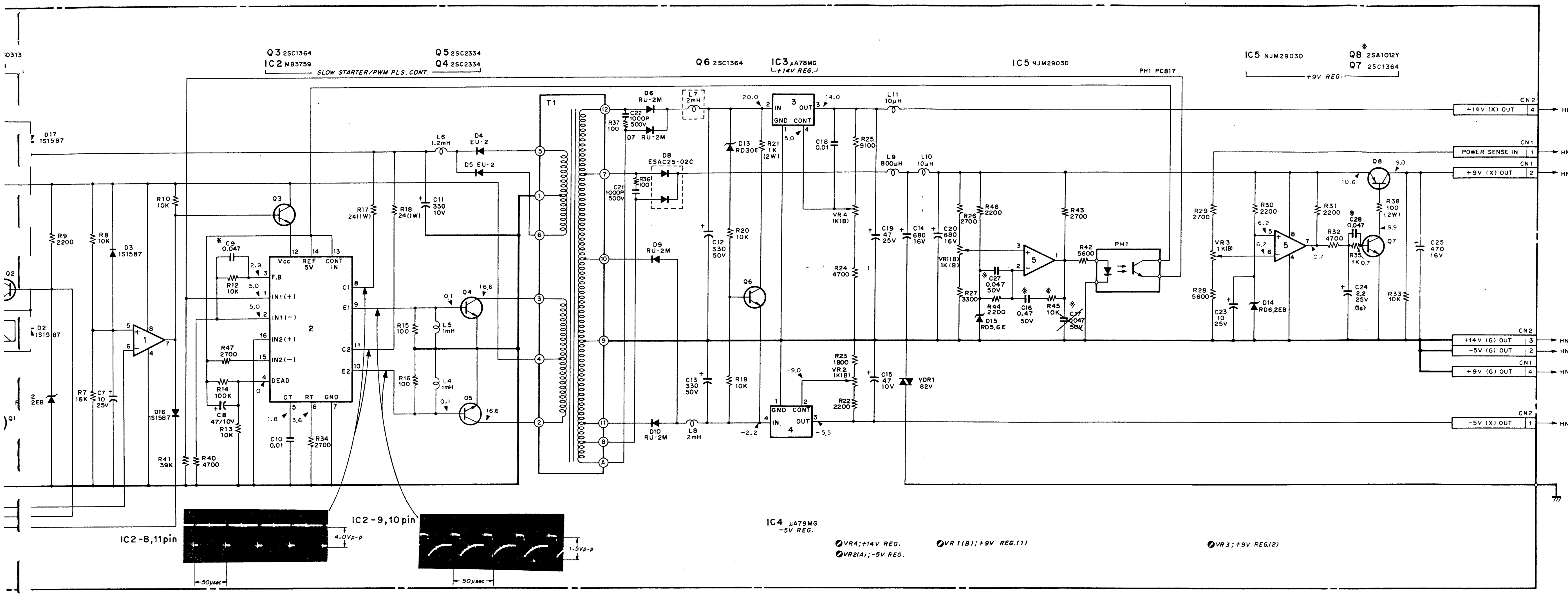

COMMON (5)
COMMON (1)
IN (2)
OUT (3)
CONT IN (4)

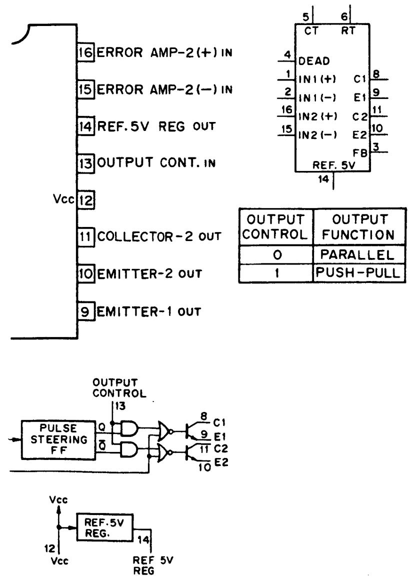

1
COM(GND)
2 IN
OUT 3
CONT
4

µA79MGU1C (FSC)
FOUR TERMINAL NEGATIVE ADJUSTABLE VOLTAGE REGULATOR
—FRONT VIEW—


IN (5)
COMMON (1)
CONT IN (2)
OUT (3)
IN (4)

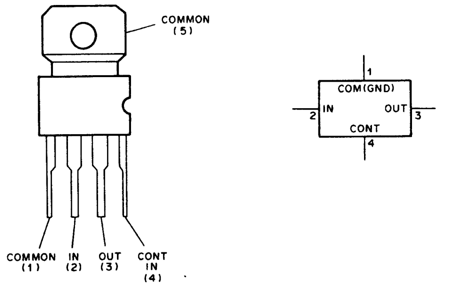

1
COM(GND)
4 (5) IN
OUT 3
CONT
2


D313
D17
1S1587
Q2
D2
1S1587
2EB
Q1
R9
2200
R8
10K
D3
1S1587
R7
16K
C7
10
25V
R10
10K
D16
1S1587
R41
39K
R40
4700
Q3 2SC1364
IC2 MB3759
SLOW STARTER/PWM PLS. CONT.
Q5 2SC2334
Q4 2SC2334
Q3
C9
0.047
R12
10K
2.9
5.0
R47
2700
R14
100K
C8
47/10V
R13
10K
Vcc
REF 5V
CONT IN
F.B
IN1(+)
IN1(−)
IN2(+)
IN2(−)
DEAD
CT
RT
GND
C1
E1
C2
E2
1.8
3.6
C10
0.01
R34
2700
R17
24(1W)
R18
24(1W)
C11
330
10V
L6
1.2mH
D4
EU-2
D5 EU-2
Q4
Q5
0.1
16.6
R15
100
L5
1mH
R16
100
L4
1mH
T1
IC2-8,11pin
4.0Vp-p
50μsec
IC2-9,10pin
1.5Vp-p
50μsec
Q6 2SC1364
IC3 μA78MG
+14V REG.
D6
RU-2M
C22
1000P
500V
R37
100
D7 RU-2M
L7
2mH
D8
ESAC25-02C
R36
100
C21
1000P
500V
D9
RU-2M
D10
RU-2M
L8
2mH
C12
330
50V
C13
330
50V
D13
RD30E
R21
1K
(2W)
R20
10K
R19
10K
Q6
20.0
14.0
IN
OUT
GND
CONT
5.0
C18
0.01
R25
9100
VR4
1K(B)
R24
4700
R23
1800
VR2
1K(B)
R22
2200
-9.0
-2.2
-5.5
C15
47
10V
VDR1
82V
IC4 μA79MG
-5V REG.
L11
10μH
L9
800μH
L10
10μH
C19
47
25V
C14
680
16V
C20
680
16V
R26
2700
R46
2200
VR1(B)
1K(B)
R27
3300
C27
0.047
50V
R44
2200
D15
RD5.6E
C16
0.47
50V
R45
10K
C17
0.047
50V
R43
2700
R42
5600
PH1
IC5 NJM2903D
PH1 PC817
IC5 NJM2903D
Q8 2SA1012Y
Q7 2SC1364
+9V REG.
R29
2700
VR3
1K(B)
R28
5600
C23
10
25V
R30
2200
6.2
D14
RD6.2EB
0.7
R31
2200
R32
4700
C28
0.047
R35
1K
C24
2.2
25V
(ta)
Q8
10.6
9.0
R38
100
(2W)
9.9
Q7
R33
10K
C25
470
16V
CN2
+14V (X) OUT
HN-22, 17-1
CN1
POWER SENSE IN
HN-22, 18-1
CN1
+9V (X) OUT
HN-22, 18-2
CN2
+14V (G) OUT
HN-22, 17-5
−5V (G) OUT
HN-22, 18-4
CN1
+9V (G) OUT
HN-22, 18-3
CN2
−5V (X) OUT
HN-22, 18-5
VR4; +14V REG.
VR2(A); −5V REG.
VR 1(B); +9V REG.(1)
VR3; +9V REG.(2)

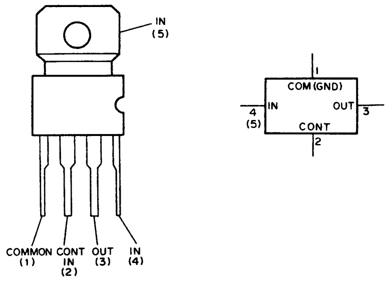

16 ERROR AMP-2(+) IN
15 ERROR AMP-2(−) IN
14 REF.5V REG OUT
13 OUTPUT CONT. IN
Vcc 12
11 COLLECTOR-2 OUT
10 EMITTER-2 OUT
9 EMITTER-1 OUT
CT
RT
DEAD
IN1(+)
IN1(−)
IN2(+)
IN2(−)
C1
E1
C2
E2
FB
REF. 5V
OUTPUT CONTROL
PULSE STEERING FF
Q
Q̄
C1
E1
C2
E2
Vcc
REF.5V REG.
Vcc
REF 5V REG

OUTPUT CONTROL	OUTPUT FUNCTION
0	PARALLEL
1	PUSH-PULL

μA78MG (FSC)
FOUR TERMINAL POSITIVE ADJUSTABLE VOLTAGE REGULATOR
−FRONT VIEW−


COMMON (5)
COMMON (1)
IN (2)
OUT (3)
CONT IN (4)
COM(GND)
IN
OUT
CONT
1
2
3
4

μA79MGU1C (FSC)
FOUR TERMINAL NEGATIVE ADJUSTABLE VOLTAGE REGULATOR
−FRONT VIEW−


IN (5)
COMMON (1)
CONT IN (2)
OUT (3)
IN (4)
COM(GND)
IN
OUT
CONT
1
4 (5)
3
2

NOTE

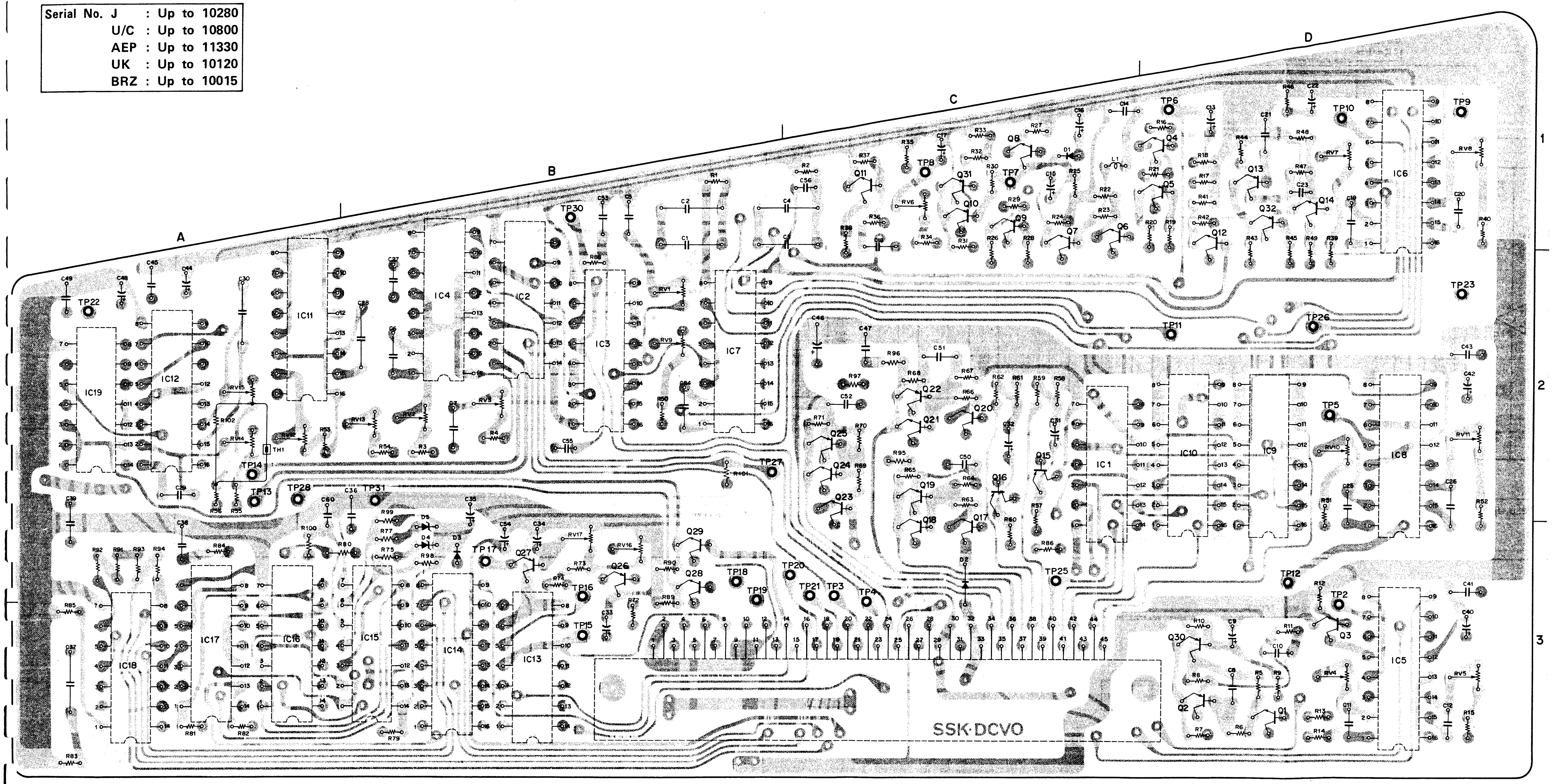
MARK	CHANGE INFORMATION	SERIAL NO.
※	R45 1K ⟶ 10K C16 3.3μF ⟶ 0.47μF C28 0.047μF ADD C9 1μF ⟶ 0.047μF Q8 2SB850-03-B ⟶ 2SA1012Y C17 ⟶ DELETE C27 0.47 ⟶ 0.047	J; 10171~ U/C; 10501~ AEP; 10381~ UK; 10041~ BRZ; 10001~

NOTE:
All voltage are measured with a digital voltmeter (input impedance 10MΩ).

SD-2 BOARD

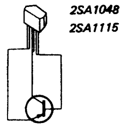
– SOLDERING SIDE –

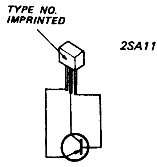
Serial No.			
J	:	Up to	10280
U/C	:	Up to	10800
AEP	:	Up to	11330
UK	:	Up to	10120
BRZ	:	Up to	10015

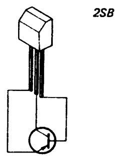

A
B
C
D
1
2
3
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
TP20
TP21
TP22
TP23
TP25
TP26
TP27
TP28
TP30
TP31
SSK·DCVO

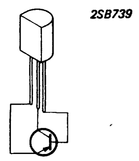
D1	C - 1	R
D2	C - 3	R
D3	B - 3	R
D4	B - 3	R
D5	B - 3	R
		R
IC1	C - 2	R
IC2	B - 2	R
IC3	B - 2	R
IC4	B - 2	R
IC5	D - 3	R
IC6	D - 1	R
IC7	B - 2	R
IC8	D - 2	F
IC9	D - 2	F
IC10	D - 2	F
IC11	A - 2	F
IC12	A - 2	
IC13	B - 3	T
IC14	B - 3	T
IC15	B - 3	T
IC16	A - 3	T
IC17	A - 3	T
IC18	A - 3	T
IC19	A - 2	T
		T
Q1	D - 3	T
Q2	D - 3	T
Q3	D - 3	T
Q4	D - 1	T
Q5	D - 1	T
Q6	C - 1	T
Q7	C - 1	T
Q8	C - 1	T
Q9	C - 1	T
Q10	C - 1	T
Q11	C - 1	T
Q12	D - 1	T
Q13	D - 1	T
Q14	D - 1	T
Q15	C - 2	T
Q16	C - 2	T
Q17	C - 3	T
Q18	C - 3	T
Q19	C - 2	T
Q20	C - 2	T
Q21	C - 2	
Q22	C - 2	
Q23	C - 2	
Q24	C - 2	
Q25	C - 2	
Q26	B - 3	
Q27	B - 3	
Q28	B - 3	
Q29	B - 3	
Q30	D - 3	
Q31	C - 1	
Q32	D - 1	

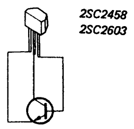
SD-2 BOARD
1-606-070-12
SEG-2000/2000A
SEG-2000P/2000AP
SEG-2000PM/2000APM

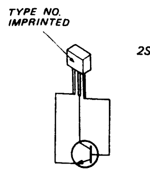

2SA1048
2SA1115

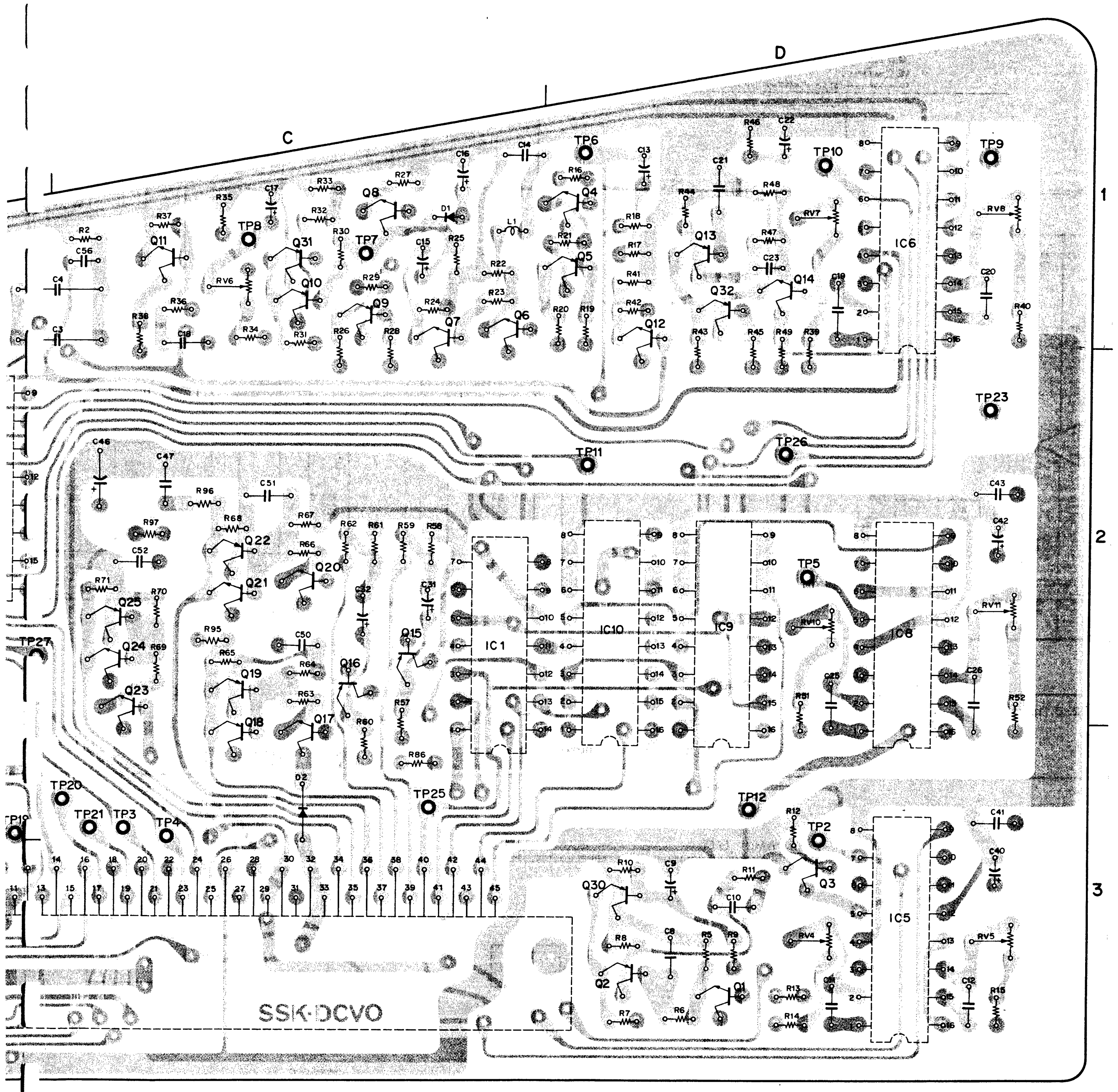

TYPE NO. IMPRINTED
2SA1175





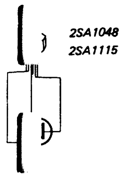

2SC2458
2SC2603

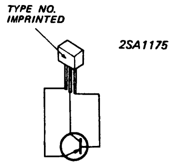

TYPE NO. IMPRINTED
2SC2785

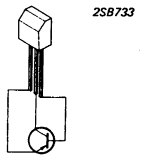

C
D
1
2
3
IC1
IC5
IC6
IC8
IC9
IC10
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP19
TP20
TP21
TP23
TP25
TP26
TP27
RV4
RV5
RV6
RV7
RV8
RV10
RV11
SSK·DCVO

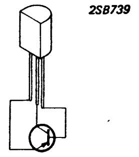
SD-2 BOARD
1-606-070-12
SEG-2000/2000A
SEG-2000P/2000AP
SEG-2000PM/2000APM

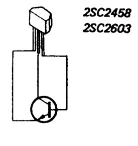
D1	C - 1
D2	C - 3
D3	B - 3
D4	B - 3
D5	B - 3
IC1	C - 2
IC2	B - 2
IC3	B - 2
IC4	B - 2
IC5	D - 3
IC6	D - 1
IC7	B - 2
IC8	D - 2
IC9	D - 2
IC10	D - 2
IC11	A - 2
IC12	A - 2
IC13	B - 3
IC14	B - 3
IC15	B - 3
IC16	A - 3
IC17	A - 3
IC18	A - 3
IC19	A - 2
Q1	D - 3
Q2	D - 3
Q3	D - 3
Q4	D - 1
Q5	D - 1
Q6	C - 1
Q7	C - 1
Q8	C - 1
Q9	C - 1
Q10	C - 1
Q11	C - 1
Q12	D - 1
Q13	D - 1
Q14	D - 1
Q15	C - 2
Q16	C - 2
Q17	C - 3
Q18	C - 3
Q19	C - 2
Q20	C - 2
Q21	C - 2
Q22	C - 2
Q23	C - 2
Q24	C - 2
Q25	C - 2
Q26	B - 3
Q27	B - 3
Q28	B - 3
Q29	B - 3
Q30	D - 3
Q31	C - 1
Q32	D - 1
RV1	B - 2
RV2	B - 2
RV3	B - 2
RV4	D - 3
RV5	D - 3
RV6	C - 1
RV7	D - 1
RV8	D - 1
RV9	B - 2
RV10	D - 2
RV11	D - 2
RV12	A - 2
RV13	B - 2
RV14	A - 2
RV15	A - 2
RV16	B - 3
RV17	B - 3
TP2	D - 3
TP3	C - 3
TP4	C - 3
TP5	D - 2
TP6	D - 1
TP7	C - 1
TP8	C - 1
TP9	D - 1
TP10	D - 1
TP11	D - 2
TP12	D - 3
TP13	A - 2
TP14	A - 2
TP15	B - 3
TP16	B - 3
TP17	B - 3
TP18	B - 3
TP19	B - 3
TP20	C - 3
TP21	C - 3
TP22	A - 2
TP23	D - 2
TP25	C - 3
TP26	D - 2
TP27	B - 2
TP28	A - 2
TP30	B - 1
TP31	B - 2

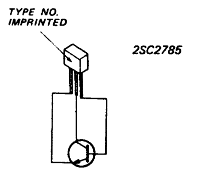

2SA1048
2SA1115


TYPE NO.
IMPRINTED
2SA1175

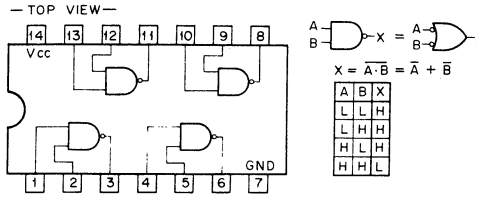

2SB733


2SB739


2SC2458
2SC2603


TYPE NO.
IMPRINTED
2SC2785

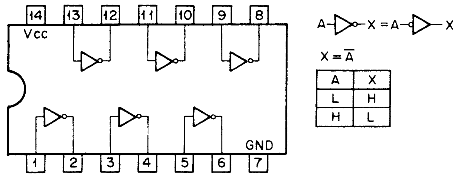
SN74LS00N (TI)
TTL NAND GATE
— TOP VIEW —



$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	X
L	L	H
L	H	H
H	L	H
H	H	L

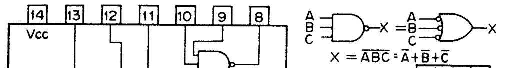
SN74LS04N (TI)
TTL INVERTER
— TOP VIEW —



$X = \overline{A}$

A	X
L	H
H	L

SN74LS10N (TI)
TTL 3-INPUT POSITIVE NAND GATE
— TOP VIEW —

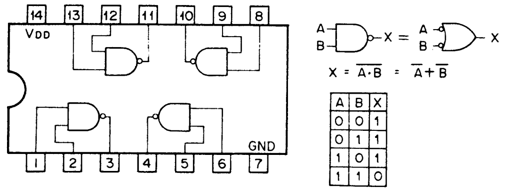

Vcc
GND
A
B
C
X

$X = \overline{ABC} = \overline{A} + \overline{B} + \overline{C}$

A	B	C	X
0	0	0	1
0	0	1	1
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

0: LOW LEVEL
1: HIGH LEVEL

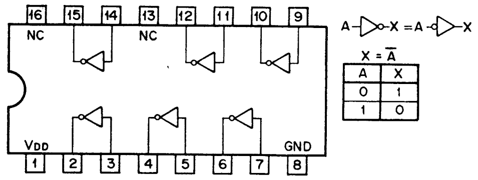
TC4011BP (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —



$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

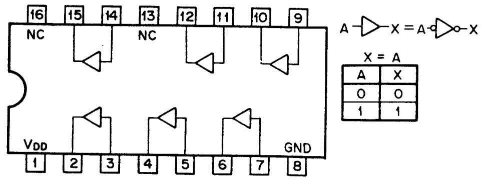
TC4049BP (TOSHIBA)
C-MOS INVERTING TYPE BUFFER/CONVERTER
— TOP VIEW —


NC
NC
VDD
GND
A
X

$X = \overline{A}$

A	X
0	1
1	0

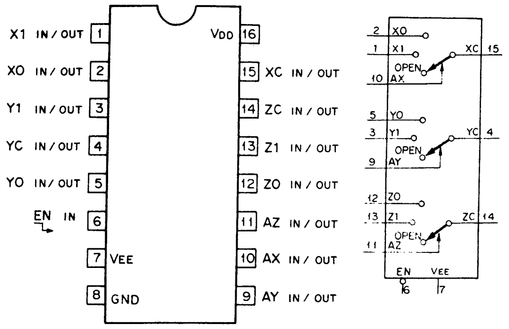
TC4050BP (TOSHIBA)
C-MOS NON-INVERTING TYPE BUFFER/CONVERTER
— TOP VIEW —


NC
NC
VDD
GND
A
X

$X = A$

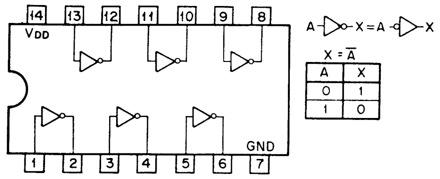
A	X
0	0
1	1

TC4053BP (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER
— TOP VIEW —


X1 IN / OUT 1
XO IN / OUT 2
Y1 IN / OUT 3
YC IN / OUT 4
YO IN / OUT 5
EN IN 6
7 VEE
8 GND
VDD 16
15 XC IN / OUT
14 ZC IN / OUT
13 Z1 IN / OUT
12 ZO IN / OUT
11 AZ IN / OUT
10 AX IN / OUT
9 AY IN / OUT
OPEN
EN
VEE

CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z,)	
0	0	0
0	1	1
1	X	OPEN

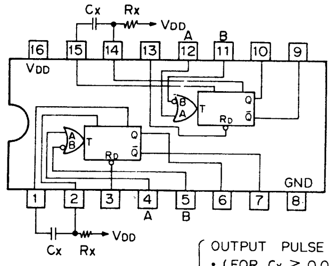
TC4069UBP (TOSHIBA)
C-MOS INVERTER
— TOP VIEW —



$X = \overline{A}$

A	X
0	1
1	0

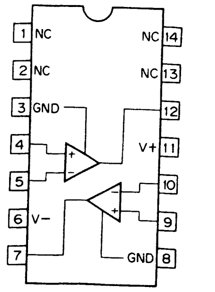
TC4528BP (TOSHIBA)
C-MOS RETRIGGERABLE / RESETTABLE MMV
— TOP VIEW —


Cx
Rx
VDD
A
B
T
Q
RD
GND

INPUTS			OUTPUTS	
A	B	RD	Q	$\overline{Q}$
↑	1	1	⎍	⊔
↑	0	1	Q	$\overline{Q}$
1	↓	1	Q	$\overline{Q}$
0	↓	1	⎍	⊔
X	X	0	0	1

OUTPUT PULSE WIDTH Q OR $\overline{Q}$
- (FOR $C_x \geqq 0.01\mu F$ USE FORMULA)
  $PW = 0.2 \cdot R_x \cdot C_x \cdot \ln (V_{DD} - GND)$
- (FOR $C_x < 0.01\mu F$ USE DATA BOOK.)

µPC 319C (NEC)
DUAL VOLTAGE COMPARATOR
— TOP VIEW —

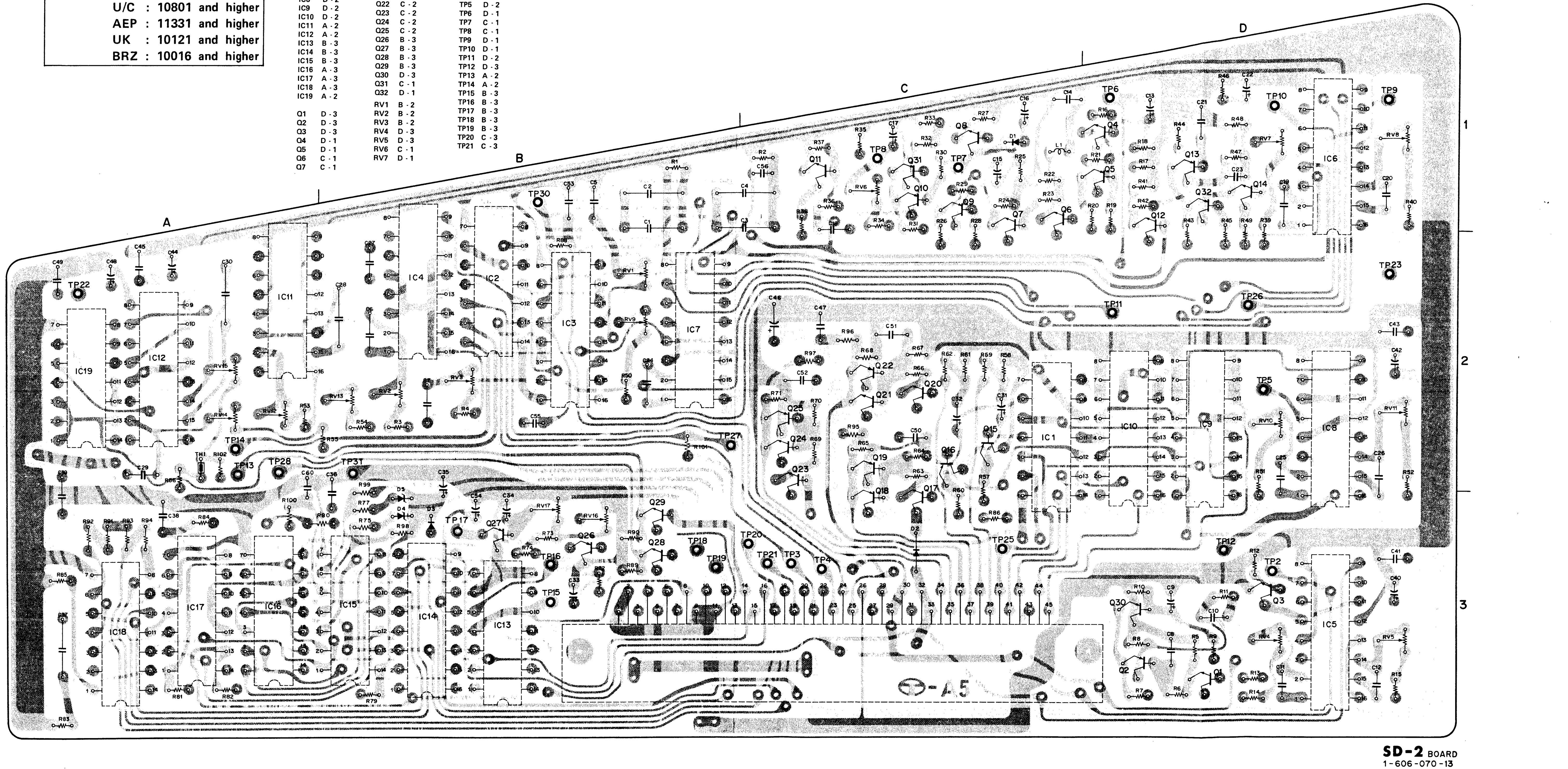

1 NC
2 NC
3 GND
4
5
6 V−
7
NC 14
NC 13
12
V+ 11
10
9
GND 8

SD-2 BOARD

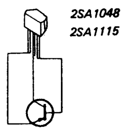
– SOLDERING SIDE –

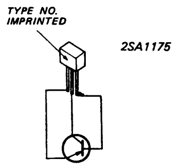
Serial No.		
J	:	10281 and higher
U/C	:	10801 and higher
AEP	:	11331 and higher
UK	:	10121 and higher
BRZ	:	10016 and higher

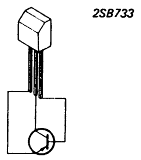
D1	C - 1
D2	C - 3
D3	B - 3
D4	B - 3
D5	B - 3
IC1	C - 2
IC2	B - 2
IC3	B - 2
IC4	B - 2
IC5	D - 3
IC6	D - 1
IC7	B - 2
IC8	D - 2
IC9	D - 2
IC10	D - 2
IC11	A - 2
IC12	A - 2
IC13	B - 3
IC14	B - 3
IC15	B - 3
IC16	A - 3
IC17	A - 3
IC18	A - 3
IC19	A - 2
Q1	D - 3
Q2	D - 3
Q3	D - 3
Q4	D - 1
Q5	D - 1
Q6	C - 1
Q7	C - 1
Q8	C - 1
Q9	C - 1
Q10	C - 1
Q11	C - 1
Q12	D - 1
Q13	D - 1
Q14	D - 1
Q15	C - 2
Q16	C - 2
Q17	C - 3
Q18	C - 3
Q19	C - 2
Q20	C - 2
Q21	C - 2
Q22	C - 2
Q23	C - 2
Q24	C - 2
Q25	C - 2
Q26	B - 3
Q27	B - 3
Q28	B - 3
Q29	B - 3
Q30	D - 3
Q31	C - 1
Q32	D - 1
RV1	B - 2
RV2	B - 2
RV3	B - 2
RV4	D - 3
RV5	D - 3
RV6	C - 1
RV7	D - 1
RV8	D - 1
RV9	B - 2
RV10	D - 2
RV11	D - 2
RV12	A - 2
RV13	B - 2
RV14	A - 2
RV15	A - 2
RV16	B - 3
RV17	B - 3
TP2	D - 3
TP3	C - 3
TP4	C - 3
TP5	D - 2
TP6	D - 1
TP7	C - 1
TP8	C - 1
TP9	D - 1
TP10	D - 1
TP11	D - 2
TP12	D - 3
TP13	A - 2
TP14	A - 2
TP15	B - 3
TP16	B - 3
TP17	B - 3
TP18	B - 3
TP19	B - 3
TP20	C - 3
TP21	C - 3
TP22	A - 2
TP23	D - 2
TP25	C - 3
TP26	D - 2
TP27	B - 2
TP28	A - 2
TP30	B - 1
TP31	B - 2

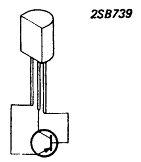

A
B
C
D
1
2
3
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
A5

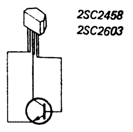
SD-2 BOARD
1-606-070-13
SEG-2000/SEG-2000A
SEG-2000P/SEG-2000AP
SEG-2000PM/SEG-2000APM

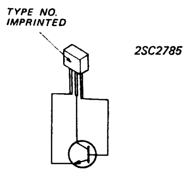

2SA1048
2SA1115


TYPE NO. IMPRINTED
2SA1175

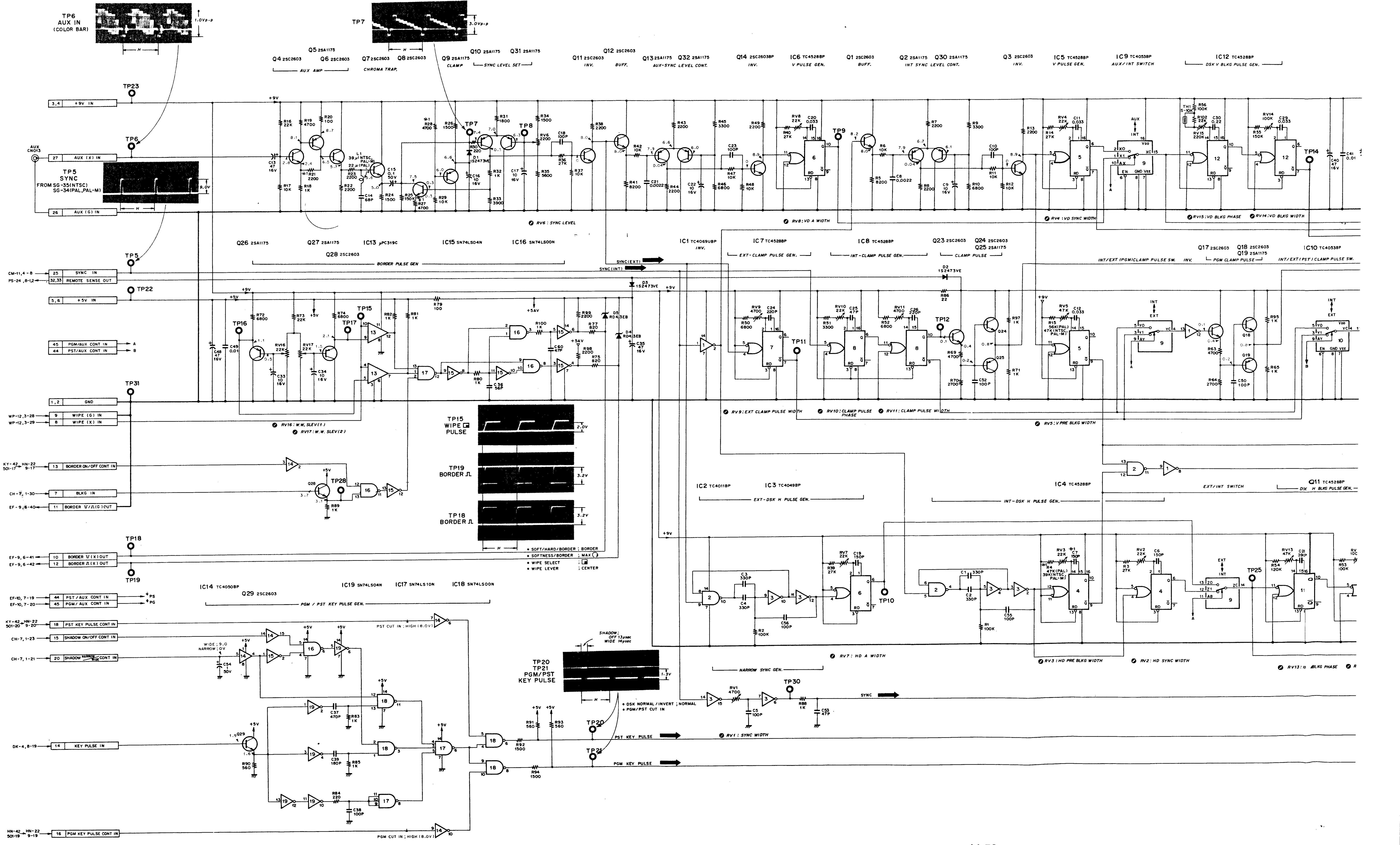


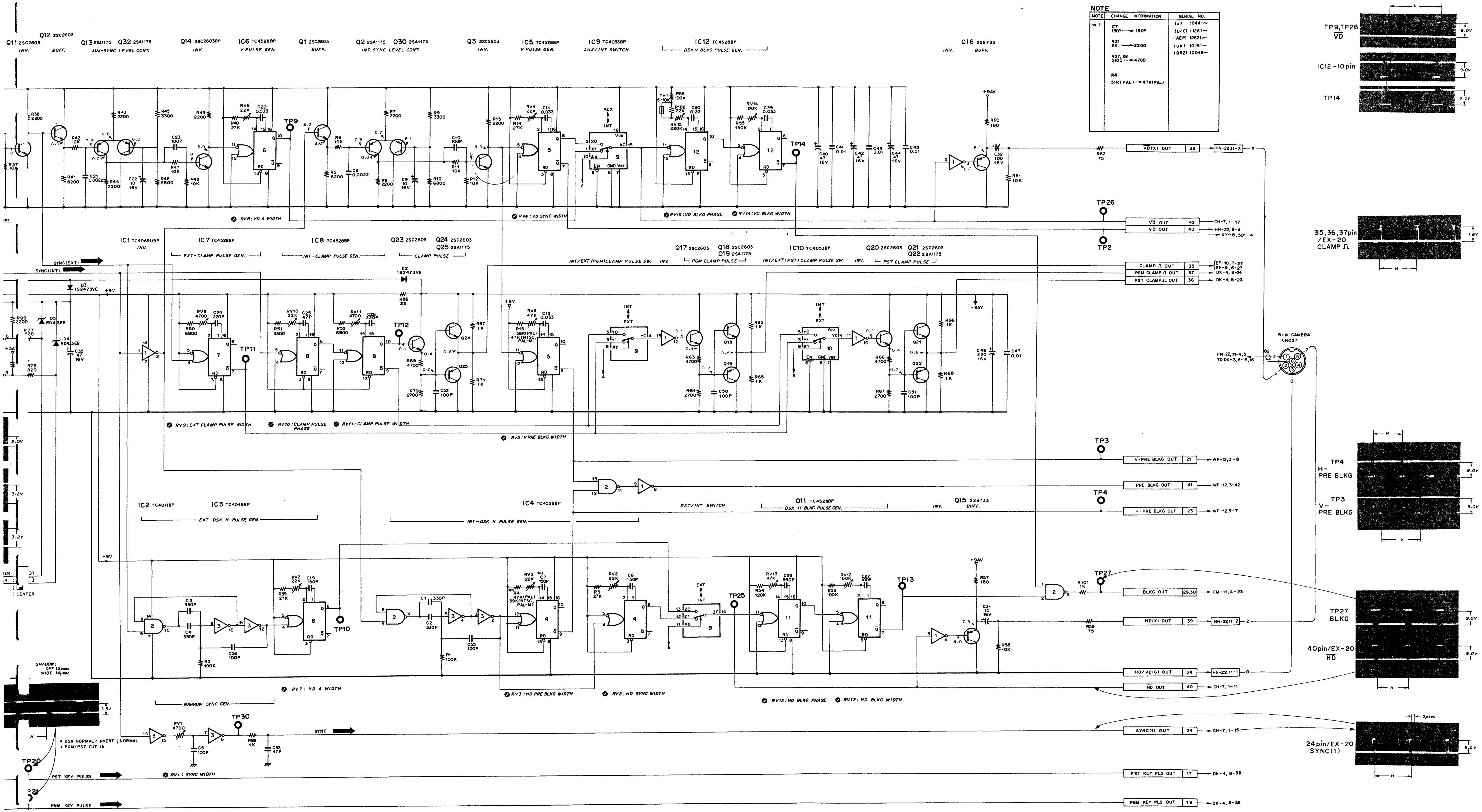



2SC2458
2SC2603


TYPE NO. IMPRINTED
2SC2785

SD-2 BOARD (SPECIAL EFFECT CONTROL PULSE SYSTEM)

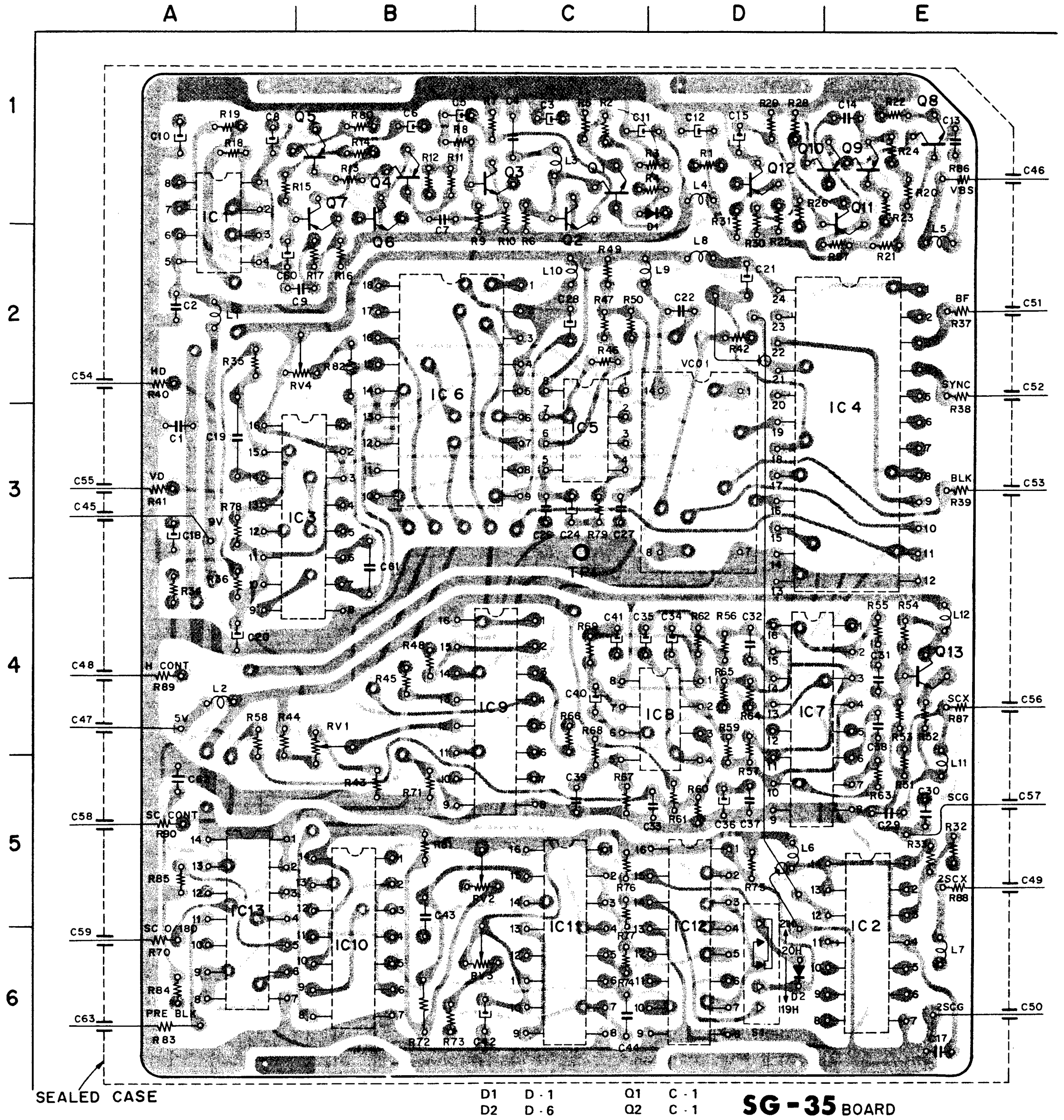

TP6
AUX IN
(COLOR BAR)
1.0Vp-p
TP7
3.0Vp-p
TP5
SYNC
FROM SG-35(NTSC)
SG-34(PAL,PAL-M)
9.0V
Q4 2SC2603
Q5 2SA1175
Q6 2SC2603
AUX AMP
Q7 2SC2603
Q8 2SC2603
CHROMA TRAP.
Q9 2SA1175
CLAMP
Q10 2SA1175
Q31 2SA1175
SYNC LEVEL SET
Q11 2SC2603
INV.
Q12 2SC2603
BUFF.
Q13 2SA1175
Q32 2SA1175
AUX-SYNC LEVEL CONT.
Q14 2SC2603BP
INV.
IC6 TC4528BP
V PULSE GEN.
Q1 2SC2603
BUFF.
Q2 2SA1175
Q30 2SA1175
INT SYNC LEVEL CONT.
Q3 2SC2603
INV.
IC5 TC4528BP
V PULSE GEN.
IC9 TC4053BP
AUX/INT SWITCH
IC12 TC4528BP
DSK V BLKG PULSE GEN.
TP23
3,4 +9V IN
AUX CN013
27 AUX (X) IN
26 AUX (G) IN
RV6 : SYNC LEVEL
RV8 : VD A WIDTH
RV4 : VD SYNC WIDTH
RV15 : VD BLKG PHASE
RV14 : VD BLKG WIDTH
Q26 2SA1175
Q27 2SA1175
IC13 μPC319C
IC15 SN74LS04N
IC16 SN74LS00N
Q28 2SC2603
BORDER PULSE GEN
IC1 TC4069UBP
INV.
IC7 TC4528BP
EXT-CLAMP PULSE GEN.
IC8 TC4528BP
INT-CLAMP PULSE GEN.
Q23 2SC2603
Q24 2SC2603
Q25 2SA1175
CLAMP PULSE
Q17 2SC2603
Q18 2SC2603
Q19 2SA1175
PGM CLAMP PULSE
INT/EXT (PGM)CLAMP PULSE SW.
INV.
IC10 TC4053BP
INT/EXT (PST) CLAMP PULSE SW.
SYNC(EXT)
SYNC(INT)
TP22
25 SYNC IN
32,33 REMOTE SENSE OUT
CM-11,4-8
PS-24,6-1,2
5,6 +5V IN
45 PGM/AUX CONT IN
44 PST/AUX CONT IN
TP16
TP17
TP15
TP31
1,2 GND
9 WIPE (G) IN
8 WIPE (X) IN
WP-12,3-28
WP-12,3-29
RV16 : W.W. SLEV(1)
RV17 : W.W. SLEV(2)
TP15
WIPE
PULSE
2.0V
TP19
BORDER
3.2V
TP18
BORDER
3.2V
RV9 : EXT CLAMP PULSE WIDTH
RV10 : CLAMP PULSE PHASE
RV11 : CLAMP PULSE WIDTH
RV5 : V PRE BLKG WIDTH
TP11
TP12
TP9
TP14
13 BORDER ON/OFF CONT IN
KY-42 HN-22
501-17 9-17
7 BLKG IN
CH-7, 1-30
11 BORDER OUT
EF-9, 6-40
TP28
EXT/INT SWITCH
Q11 TC4528BP
DSK H BLKG PULSE GEN.
IC2 TC4011BP
IC3 TC4049BP
EXT-DSK H PULSE GEN.
IC4 TC4528BP
INT-DSK H PULSE GEN.
TP18
10 BORDER (X) OUT
12 BORDER (X) OUT
EF-9, 6-41
EF-9, 6-42
TP19
• SOFT/HARD/BORDER ; BORDER
• SOFTNESS/BORDER ; MAX
• WIPE SELECT
• WIPE LEVER ; CENTER
IC14 TC4050BP
Q29 2SC2603
IC19 SN74LS04N
IC17 SN74LS10N
IC18 SN74LS00N
PGM / PST KEY PULSE GEN.
44 PST/AUX CONT IN
45 PGM/AUX CONT IN
EF-10, 7-19
EF-10, 7-20
PS
PG
18 PST KEY PULSE CONT IN
KY-42 HN-22
501-20 9-20
15 SHADOW ON/OFF CONT IN
CH-7, 1-23
20 SHADOW NARROW WIDE CONT IN
CH-7, 1-21
WIDE ; 9.0
NARROW ; 0V
PST CUT IN ; HIGH (8.0V)
SHADOW;
OFF 13μsec
WIDE 14μsec
TP20
TP21
PGM/PST
KEY PULSE
1.3V
• DSK NORMAL/INVERT ; NORMAL
• PGM/PST CUT IN
14 KEY PULSE IN
DK-4, 8-19
TP20
TP21
PST KEY PULSE
PGM KEY PULSE
TP30
SYNC
RV1 : SYNC WIDTH
NARROW SYNC GEN.
RV7 : HD A WIDTH
RV3 : HD PRE BLKG WIDTH
RV2 : HD SYNC WIDTH
RV13 : BLKG PHASE
TP10
TP25
16 PGM KEY PULSE CONT IN
HN-42 HN-22
501-19 9-19
PGM CUT IN ; HIGH (8.0V)


Q11 2SC2603 INV.
Q12 2SC2603 BUFF.
Q13 2SA1175 Q32 2SA1175 AUX-SYNC LEVEL CONT.
Q14 2SC2603BP INV.
IC6 TC4528BP V PULSE GEN.
Q1 2SC2603 BUFF.
Q2 2SA1175 Q30 2SA1175 INT SYNC LEVEL CONT.
Q3 2SC2603 INV.
IC5 TC4528BP V PULSE GEN.
IC9 TC4053BP AUX/INT SWITCH
IC12 TC4528BP DSK V BLKG PULSE GEN.
Q16 2SB733 INV. BUFF.
RV8: VD A WIDTH
RV4: VD SYNC WIDTH
RV15: VD BLKG PHASE
RV14: VD BLKG WIDTH
TP9
TP14
TP26
TP2
IC1 TC4069UBP INV.
IC7 TC4528BP EXT-CLAMP PULSE GEN.
IC8 TC4528BP INT-CLAMP PULSE GEN.
Q23 2SC2603 Q24 2SC2603 Q25 2SA1175 CLAMP PULSE
INT/EXT (PGM)CLAMP PULSE SW.
Q17 2SC2603 INV.
Q18 2SC2603 Q19 2SA1175 PGM CLAMP PULSE
IC10 TC4053BP INT/EXT (PST) CLAMP PULSE SW.
Q20 2SC2603 INV.
Q21 2SC2603 Q22 2SA1175 PST CLAMP PULSE
SYNC(EXT)
SYNC(INT)
TP11
TP12
RV9: EXT CLAMP PULSE WIDTH
RV10: CLAMP PULSE PHASE
RV11: CLAMP PULSE WIDTH
RV5: V PRE BLKG WIDTH
TP3
TP4
IC2 TC4011BP
IC3 TC4049BP
EXT-DSK H PULSE GEN.
IC4 TC4528BP
INT-DSK H PULSE GEN.
EXT/INT SWITCH
Q11 TC4528BP DSK H BLKG PULSE GEN.
Q15 2SB733 INV. BUFF.
TP10
TP25
TP13
TP27
RV7: HD A WIDTH
RV3: HD PRE BLKG WIDTH
RV2: HD SYNC WIDTH
RV13: HD BLKG PHASE
RV12: HD BLKG WIDTH
NARROW SYNC GEN.
TP30
SYNC
RV1: SYNC WIDTH
TP20
PST KEY PULSE
PGM KEY PULSE
SHADOW: OFF 13μsec WIDE 14μsec
DSK NORMAL/INVERT; NORMAL
PGM/PST CUT IN
VD(X) OUT 38 HN-22,11-3
VD OUT 42 CH-7,1-17
VD OUT 43 HN-22,9-4 KY-18,501-4
CLAMP ⎍ OUT 35 EF-10,7-27 EF-9,6-27
PGM CLAMP ⎍ OUT 37 DK-4,8-24
PST CLAMP ⎍ OUT 36 DK-4,8-23
V-PRE BLKG OUT 21 WP-12,3-8
PRE BLKG OUT 41 WP-12,3-42
H-PRE BLKG OUT 23 WP-12,3-7
BLKG OUT 29,30 CM-11,4-23
HD(X) OUT 39 HN-22,11-2
HD/VD(G) OUT 34 HN-22,11-1
HD OUT 40 CH-7,1-11
SYNC(1) OUT 24 CH-7,1-15
PST KEY PLS OUT 17 DK-4,8-39
PGM KEY PLS OUT 19 DK-4,8-38
B/W CAMERA CN027
HN-22,11-4,5 TO DK-3,8-15,16
TP9,TP26 VD
IC12-10pin
TP14
35,36,37pin /EX-20 CLAMP ⎍
TP4 H-PRE BLKG
TP3 V-PRE BLKG
TP27 BLKG
40pin/EX-20 HD
24pin/EX-20 SYNC(1)
9.0V
1.6V
5μsec
V
H

NOTE

MOTE	CHANGE INFORMATION	SERIAL NO.
※1	C7 130P → 150P R21 2K → 2200 R27, 28 5100 → 4700 R4 51K(PAL) → 47K(PAL)	(J) 10441~ (U/C) 11261~ (AEP) 12821~ (UK) 10191~ (BRZ) 10046~

SG-35 BOARD
– SOLDERING SIDE –
[For SEG-2000A use]

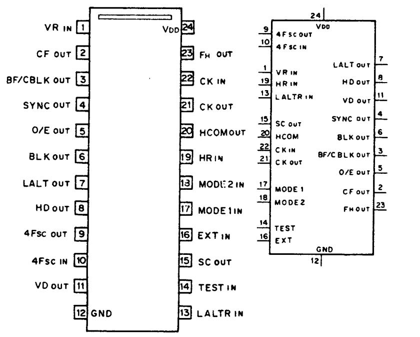

A
B
C
D
E
1
2
3
4
5
6
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
RV1
RV4
VCO1
C46
C51
C52
C53
C56
C57
C49
C50
C54
C55
C45
C48
C47
C58
C59
C63
HD
VD
H CONT
5V
SC CONT
SC O
PRE BLK
BF
SYNC
BLK
SCX
SCG
2SCX
2SCG
VBS
SEALED CASE

D1	D - 1
D2	D - 6
IC1	A - 1
IC2	E - 6
IC3	B - 3
IC4	E - 3
IC5	C - 3
IC6	B - 2
IC7	E - 4
IC8	D - 4
IC9	C - 4
IC10	B - 6
IC11	C - 6
IC12	D - 6
IC13	A - 6

Q1	C - 1
Q2	C - 1
Q3	C - 1
Q4	B - 1
Q5	B - 1
Q6	B - 1
Q7	B - 1
Q8	E - 1
Q9	E - 1
Q10	D - 1
Q11	E - 1
Q12	D - 1
Q13	E - 4
RV1	B - 4
RV2	C - 5
RV3	C - 6
RV4	B - 2
TP1	C - 3

SG-35 BOARD
–SOLDERING SIDE–
1-603-028-14
SEG-2000
DXC-1800
SEG-2000A
CRK-2000

CX773A (SONY)
C-MOS SYNC GENERATOR (NTSC, PAL-M, PAL, SECAM)
—TOP VIEW—


VR IN 1
CF OUT 2
BF/CBLK OUT 3
SYNC OUT 4
O/E OUT 5
BLK OUT 6
LALT OUT 7
HD OUT 8
4Fsc OUT 9
4Fsc IN 10
VD OUT 11
12 GND
VDD 24
23 FH OUT
22 CK IN
21 CK OUT
20 HCOM OUT
19 HR IN
18 MODE 2 IN
17 MODE 1 IN
16 EXT IN
15 SC OUT
14 TEST IN
13 LALTR IN
4FSC OUT
4FSC IN
VR IN
HR IN
LALTR IN
SC OUT
HCOM
CK IN
CK OUT
MODE 1
MODE 2
TEST
EXT
VDD
GND
LALT OUT
HD OUT
VD OUT
SYNC OUT
BLK OUT
BF/CBLK OUT
O/E OUT
CF OUT
FH OUT

O/E : ODD/EVEN FIELD
CF : COLOUR FRAME PULSE
HCOM : H COMPARATOR

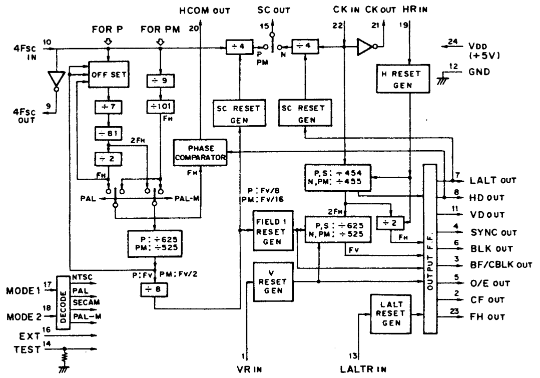
SYSTEM	4Fsc	CLOCK
NTSC	910 FH	910 FH
PAL	1135 FH+2Fv	908 FH
PALM	909 FH	910 FH
SECAM	———	908 FH

INTUPS		SYSTEM
MODE 1	MODE 2	
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

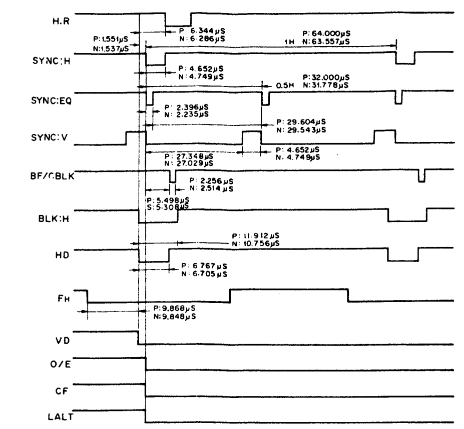
"1" : VDD
"0" : GND

INTUPS		FUNCTION
EXT	TEST	
0	0	INTERNAL
0	1	INVALID
1	0	EXT
1	1	TEST

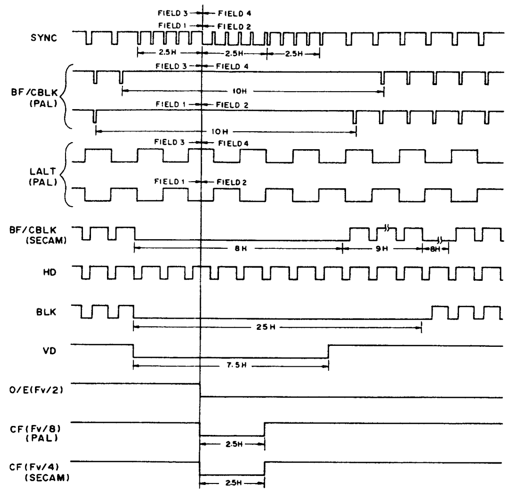
TEST "0" : OPEN
(INTERNALLY PULLED DOWN)


HCOM OUT
SC OUT
CK IN
CK OUT
HR IN
FOR P
FOR PM
4Fsc IN
4Fsc OUT
OFF SET
÷7
÷81
÷2
÷9
÷101
FH
2FH
PHASE COMPARATOR
SC RESET GEN
SC RESET GEN
H RESET GEN
÷4
÷4
P PM
N
VDD (+5V)
GND
PAL
PAL-M
P : ÷625
PM : ÷525
P : Fv
PM : Fv/2
÷8
P : Fv/8
PM : Fv/16
FIELD 1 RESET GEN
V RESET GEN
P,S : ÷454
N,PM : ÷455
P,S : ÷625
N,PM : ÷525
Fv
÷2
OUTPUT F.F.
LALT RESET GEN
MODE 1
MODE 2
DECODE
NTSC
PAL
SECAM
PAL-M
EXT
TEST
VR IN
LALTR IN
LALT OUT
HD OUT
VD OUT
SYNC OUT
BLK OUT
BF/CBLK OUT
O/E OUT
CF OUT
FH OUT

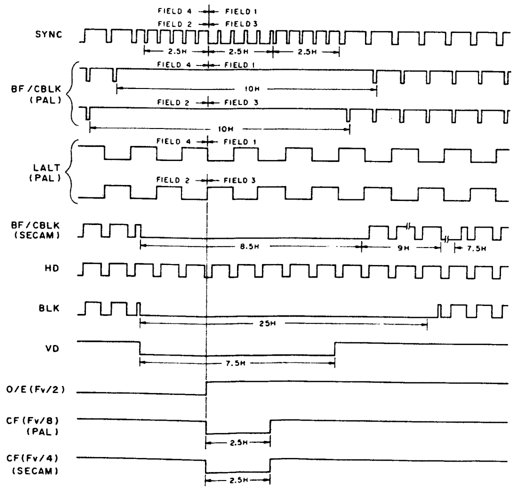
P: PAL, SECAM
N: NTSC, PALM

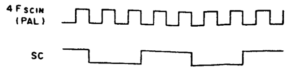


PAL, SECAM (FIELD 4, 2)



PAL, SECAM (FIELD 1, 3)

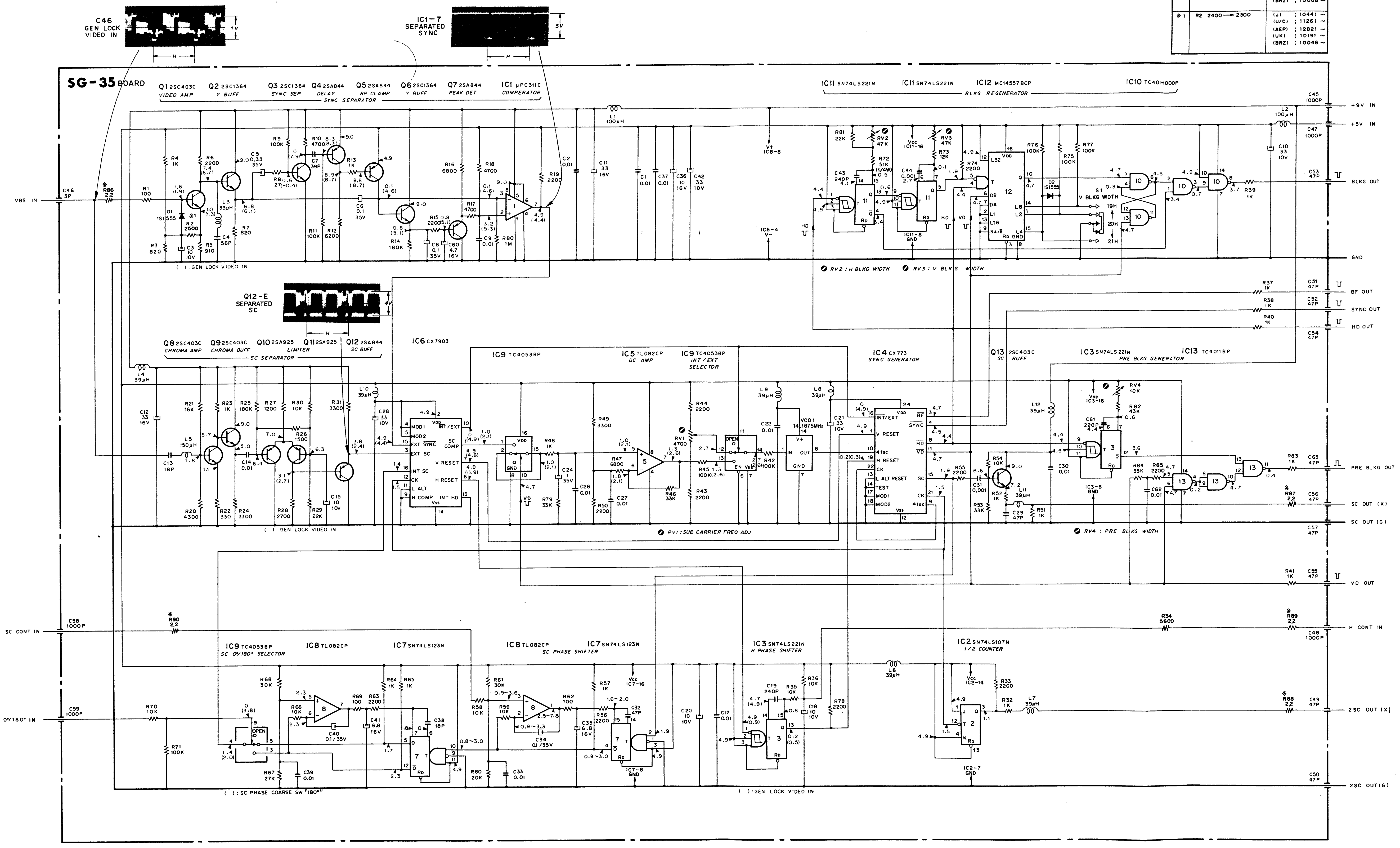




SG-35 BOARD (SYNC GENERATOR SYSTEM)
[For SEG-2000A use]

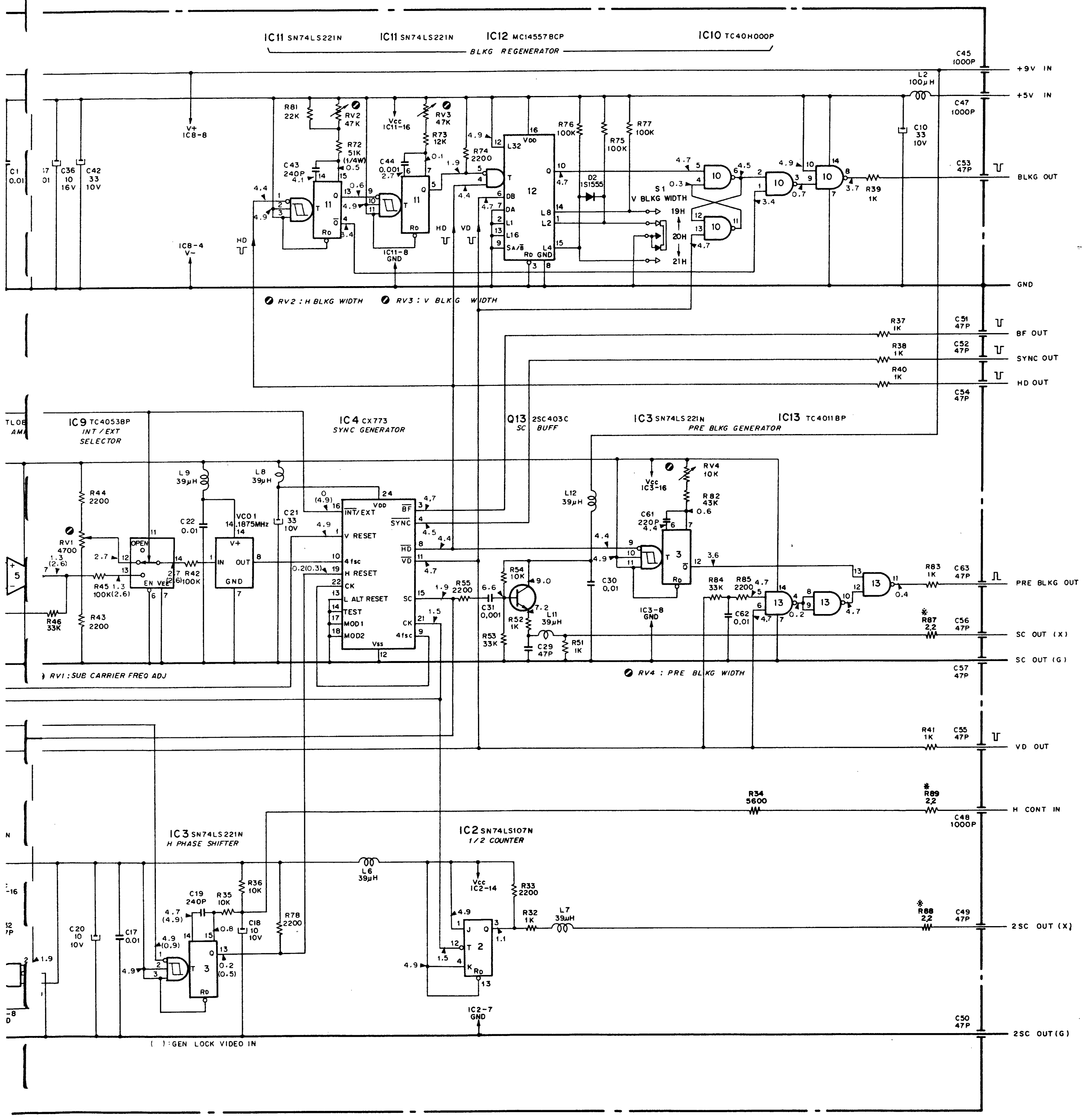
NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※	RS 4,7,9,10,11 ↓ R86,87,88,89,90(2.20)	(U/C) ; 10601 ~ (J) ; 10251 ~ (AEP) ; 10631 ~ (UK) ; 10091 ~ (BRZ) ; 10006 ~
※1	R2 2400 → 2500	(J) ; 10441 ~ (U/C) ; 11261 ~ (AEP) ; 12821 ~ (UK) ; 10191 ~ (BRZ) ; 10046 ~

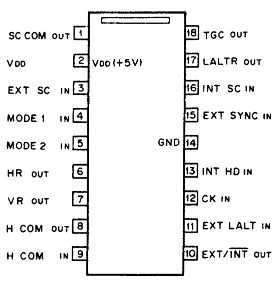

C46 GEN LOCK VIDEO IN
1V
H
IC1-7 SEPARATED SYNC
5V
SG-35 BOARD
Q1 2SC403C VIDEO AMP
Q2 2SC1364 Y BUFF
Q3 2SC1364 SYNC SEP
Q4 2SA844 DELAY
Q5 2SA844 BP CLAMP
Q6 2SC1364 Y BUFF
Q7 2SA844 PEAK DET
IC1 μPC311C COMPERATOR
SYNC SEPARATOR
VBS IN
( ) : GEN LOCK VIDEO IN
Q12-E SEPARATED SC
4V
Q8 2SC403C CHROMA AMP
Q9 2SC403C CHROMA BUFF
Q10 2SA925 LIMITER
Q11 2SA925
Q12 2SA844 SC BUFF
SC SEPARATOR
IC6 CX7903
IC9 TC4053BP
IC5 TL082CP DC AMP
IC9 TC4053BP INT/EXT SELECTOR
IC4 CX773 SYNC GENERATOR
Q13 2SC403C SC BUFF
IC3 SN74LS221N
IC13 TC4011BP
PRE BLKG GENERATOR
IC11 SN74LS221N
IC11 SN74LS221N
IC12 MC14557BCP
IC10 TC40H000P
BLKG REGENERATOR
RV2 : H BLKG WIDTH
RV3 : V BLKG WIDTH
RV1 : SUB CARRIER FREQ ADJ
RV4 : PRE BLKG WIDTH
VCO1 14.31818MHz
S1 V BLKG WIDTH
19H 20H 21H
IC9 TC4053BP SC 0°/180° SELECTOR
IC8 TL082CP
IC7 SN74LS123N
IC8 TL082CP SC PHASE SHIFTER
IC7 SN74LS123N
IC3 SN74LS221N H PHASE SHIFTER
IC2 SN74LS107N 1/2 COUNTER
( ) : SC PHASE COARSE SW "180°"
( ) : GEN LOCK VIDEO IN
SC CONT IN
SC 0°/180° IN
+9V IN
+5V IN
BLKG OUT
GND
BF OUT
SYNC OUT
HD OUT
PRE BLKG OUT
SC OUT (X)
SC OUT (G)
VD OUT
H CONT IN
2SC OUT (X)
2SC OUT (G)
L1 100μH
L2 100μH
L4 39μH
L6 39μH
L7 39μH
L8 39μH
L9 39μH
L10 39μH
L11 39μH
L12 39μH
C45 1000P
C47 1000P
C48 1000P
C58 1000P
C59 1000P
R34 5600
R86 2.2
R87 2.2
R88 2.2
R89 2.2
R90 2.2

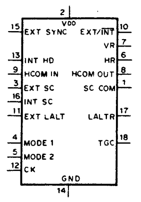
NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
※	RS 4, 7, 9, 10, 11 ↓ R86, 87, 88, 89, 90(2.2Ω)	(U/C) ; 10601 ~ (J) ; 10251 ~ (AEP) ; 10631 ~ (UK) ; 10091 ~ (BRZ) ; 10006 ~
※1	R2 2400 → 2500	(J) ; 10441 ~ (U/C) ; 11261 ~ (AEP) ; 12821 ~ (UK) ; 10191 ~ (BRZ) ; 10046 ~

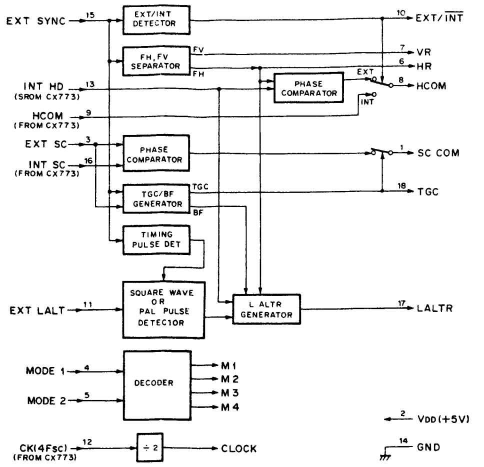

IC11 SN74LS221N
IC11 SN74LS221N
IC12 MC14557BCP
IC10 TC40H000P
BLKG REGENERATOR
+9V IN
+5V IN
BLKG OUT
GND
BF OUT
SYNC OUT
HD OUT
PRE BLKG OUT
SC OUT (X)
SC OUT (G)
VD OUT
H CONT IN
2SC OUT (X)
2SC OUT (G)
RV2 : H BLKG WIDTH
RV3 : V BLKG WIDTH
IC9 TC4053BP
INT / EXT SELECTOR
IC4 CX773
SYNC GENERATOR
Q13 2SC403C
SC BUFF
IC3 SN74LS221N
PRE BLKG GENERATOR
IC13 TC4011BP
RV4 : PRE BLKG WIDTH
RV1 : SUB CARRIER FREQ ADJ
VCO1 14.1875MHz
S1 V BLKG WIDTH
19H
20H
21H
IC3 SN74LS221N
H PHASE SHIFTER
IC2 SN74LS107N
1/2 COUNTER
( ) : GEN LOCK VIDEO IN
TL08
AMP

CX7903 (SONY)
CMOS GENLOCK DRIVER FOR CX773
— TOP VIEW —

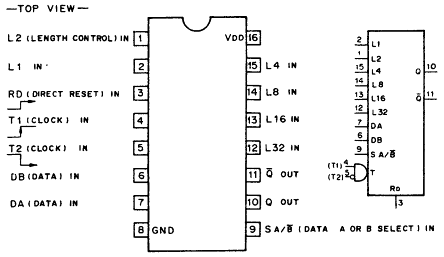

SC COM OUT 1
VDD 2
EXT SC IN 3
MODE 1 IN 4
MODE 2 IN 5
HR OUT 6
VR OUT 7
H COM OUT 8
H COM IN 9
18 TGC OUT
17 LALTR OUT
16 INT SC IN
15 EXT SYNC IN
14 GND
13 INT HD IN
12 CK IN
11 EXT LALT IN
10 EXT/INT OUT
VDD (+5V)


VDD
EXT SYNC
INT HD
HCOM IN
EXT SC
INT SC
EXT LALT
MODE 1
MODE 2
CK
GND
EXT/INT
VR
HR
HCOM OUT
SC COM
LALTR
TGC

INPUTS		EXT LOCK MODE	
MODE 2	MODE 1		
0	0	M1	PAL : VBS
0	1	M2	PALM : VBS
1	0	M3	PAL : VS/SC/LALT SECAM : VS/SC/LALT
1	.	M4	NTSC : VBS NTSC : VS/SC PALM : VS/SC/LALT


EXT SYNC
15
EXT/INT DETECTOR
FH, FV SEPARATOR
INT HD (FROM CX773)
13
PHASE COMPARATOR
HCOM (FROM CX773)
9
EXT SC
3
INT SC (FROM CX773)
16
PHASE COMPARATOR
TGC/BF GENERATOR
TIMING PULSE DET
EXT LALT
11
SQUARE WAVE OR PAL PULSE DETECTOR
L. ALTR GENERATOR
MODE 1
MODE 2
DECODER
CK (4Fsc) (FROM CX773)
12
÷ 2
EXT
INT
10 EXT/INT
7 VR
6 HR
8 HCOM
1 SC COM
18 TGC
17 LALTR
M1
M2
M3
M4
CLOCK
2 VDD (+5V)
14 GND

MC14557BCP (MOTOROLA)
C-MOS 1-TO-64-BIT VARIABLE LENGTH SHIFT REGISTER
— TOP VIEW —


L2 (LENGTH CONTROL) IN 1
L1 IN 2
RD (DIRECT RESET) IN 3
T1 (CLOCK) IN 4
T2 (CLOCK) IN 5
DB (DATA) IN 6
DA (DATA) IN 7
8 GND
VDD 16
15 L4 IN
14 L8 IN
13 L16 IN
12 L32 IN
11 Q̄ OUT
10 Q OUT
9 SA/B̄ (DATA A OR B SELECT) IN
L1
L2
L4
L8
L16
L32
DA
DB
SA/B̄
Rd

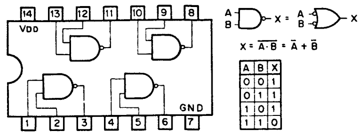
LENGTH SELECT TRUTH TABLE

L32	L16	L8	L4	L2	L1	REGISTER LENGTH
0	0	0	0	0	0	1-BIT
0	0	0	0	0	1	2-BIT
0	0	0	0	1	0	3-BIT
0	0	0	0	1	1	4-BIT
0	0	0	1	0	0	5-BIT
⋮	⋮	⋮	⋮	⋮	⋮	⋮
1	1	1	1	0	0	61-BIT
1	1	1	1	0	1	62-BIT
1	1	1	1	1	0	63-BIT
1	1	1	1	1	1	64-BIT

INPUTS				OUTPUT
RD	SA/B̄	T1	T2	Q
0	0	↑	0	DB
0	1	↑	0	DA
0	0	1	↓	DB
0	1	1	↓	DA
1	X	X	X	0

0 ; LOW
1 ; HIGH
X ; DON'T CARE

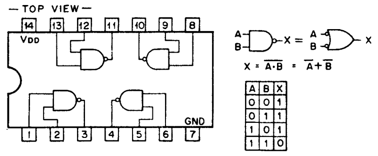
TC40H000P (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —


14 13 12 11 10 9 8
VDD
GND
1 2 3 4 5 6 7
A
B
X

$X = \overline{A \cdot B} = \bar{A} + \bar{B}$

A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

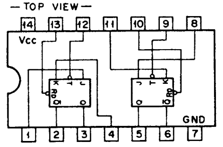
TC4011BP (TOSHIBA)
C-MOS 2-INPUT NAND GATE
— TOP VIEW —


14 13 12 11 10 9 8
VDD
GND
1 2 3 4 5 6 7
A
B
X

$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

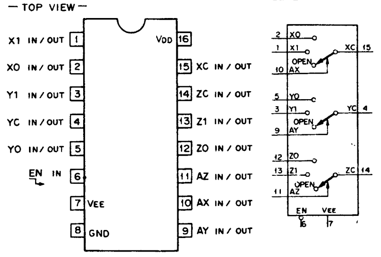
A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

SN74LS107N (TI)
TTL J-K FLIP FLOP WITH DIRECT RESET
— TOP VIEW —


14 13 12 11 10 9 8
Vcc
GND
1 2 3 4 5 6 7

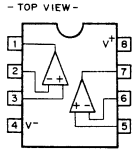
INPUTS				OUT
RD	T	J	K	Qn+1
L	X	X	X	L
H	↓	L	L	Qn
H	↓	L	H	L
H	↓	H	L	H
H	↓	H	H	Q̄n
H	H	X	X	Qn

TC4053BP (TOSHIBA)
C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER
— TOP VIEW —

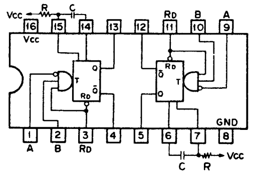

X1 IN / OUT 1
X0 IN / OUT 2
Y1 IN / OUT 3
YC IN / OUT 4
Y0 IN / OUT 5
EN IN 6
7 VEE
8 GND
VDD 16
15 XC IN / OUT
14 ZC IN / OUT
13 Z1 IN / OUT
12 Z0 IN / OUT
11 AZ IN / OUT
10 AX IN / OUT
9 AY IN / OUT
OPEN
EN
VEE

CONT. INPUTS		ON CHANNEL
EN	A (X, Y, Z,)	
0	0	0
0	1	1
1	X	OPEN

TL082CP (TI)
OPERATIONAL AMPLIFIER (JFET-INPUT)
— TOP VIEW —


1
2
3
4 V−
V+ 8
7
6
5

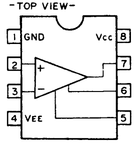
SN74LS123N (TI)
TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET
— TOP VIEW —


R
C
RD
B
A
16 15 14 13 12 11 10 9
Vcc
GND
1 2 3 4 5 6 7 8
A
B
RD
C
R
Vcc

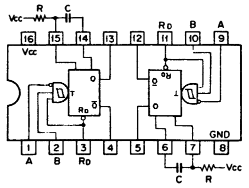
INPUTS			OUTPUTS	
RD	A	B	Q	Q̄
L	X	X	L	H
X	H	X	L	H
X	X	L	L	H
H	L	↑	⎍	⊔
H	↓	H	⎍	⊔
↑	L	H	⎍	⊔

OUTPUT PULSE WIDTH

µPC311C (NEC)
VOLTAGE COMPARATOR
— TOP VIEW —


1 GND
2
3
4 VEE
Vcc 8
7
6
5

SN74LS221N (TI)
TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT
— TOP VIEW —


Vcc
R
C
RD
B
A
16 15 14 13 12 11 10 9
Vcc
GND
1 2 3 4 5 6 7 8
A
B
RD
C
R
Vcc

INPUTS			OUTPUTS	
RD	A	B	Q	Q̄
L	X	X	L	H
X	H	X	L	H
X	X	L	L	H
H	L	↑	⎍	⊔
H	↓	H	⎍	⊔
↑	L	H	⎍	⊔

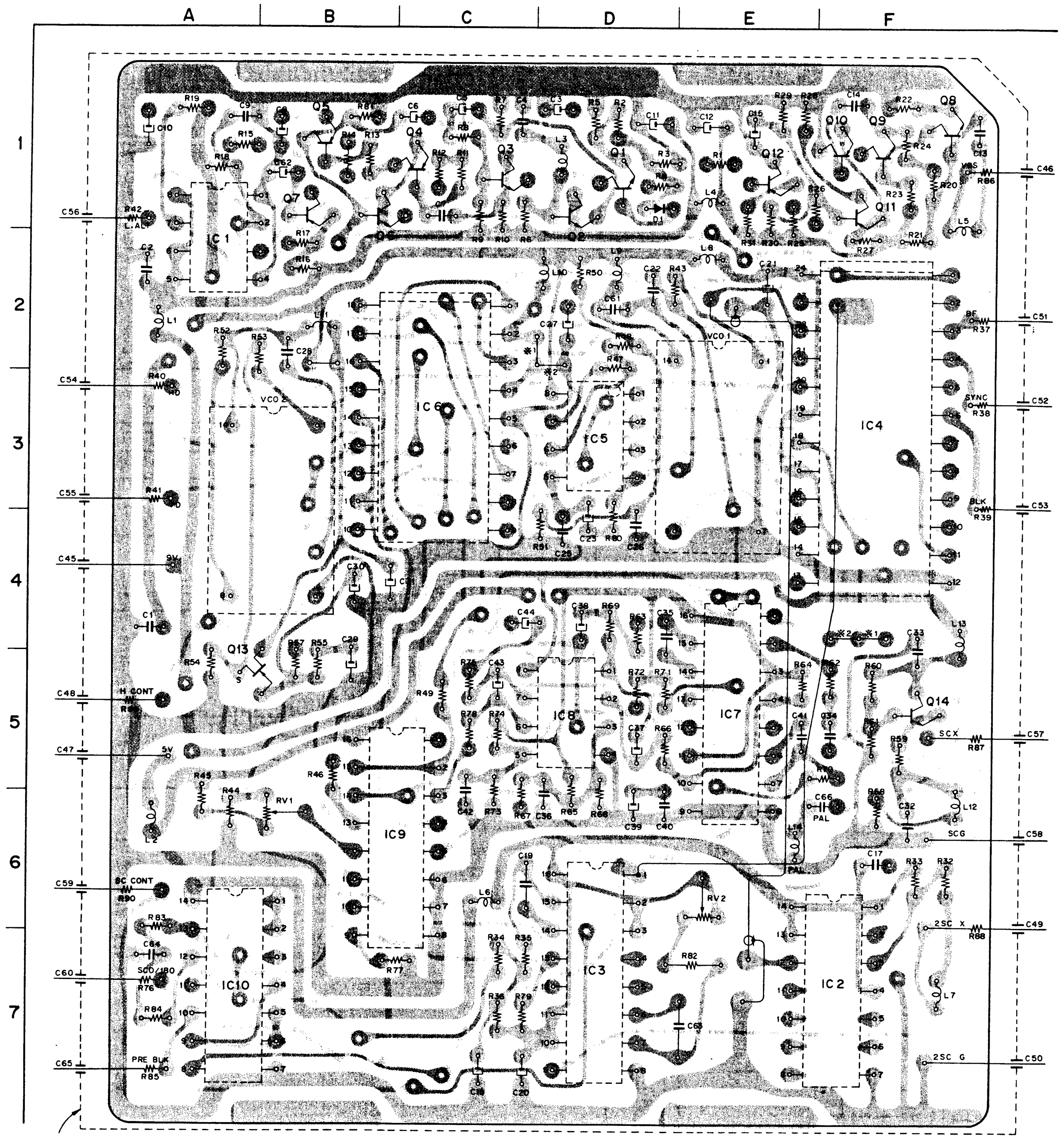
OUTPUT PULSE WIDTH ≒ 0.7CR

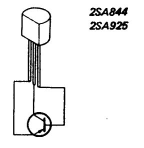
NOTE:

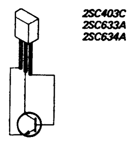
1. All voltage are measured with a digital voltmeter (input impedance 10MΩ).
2. Waveform photographs are taken under the following conditions:
   - Color bar signal (1 Vp-p) input to "VIDEO IN"

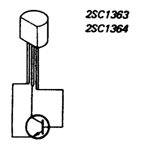
SG34 BOARD
[For SEG-2000AP/APM use]

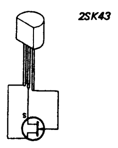
D1	D-1
IC1	A-2
IC2	F-7
IC3	D-7
IC4	F-3
IC5	D-3
IC6	C-3
IC7	E-5
IC8	D-5
IC9	C-6
IC10	A-7
Q1	D-1
Q2	D-1
Q3	C-1
Q4	C-1
Q5	B-1
Q6	B-1
Q7	B-1
Q8	F-1
Q9	F-1
Q10	F-1
Q11	F-1
Q12	E-1
Q13	B-5
Q14	F-5
RV1	B-6
RV2	E-6


A
B
C
D
E
F
1
2
3
4
5
6
7
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
VCO1
VCO2
Q1
Q3
Q4
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
C46
C51
C52
C53
C57
C58
C49
C50
C56
C54
C55
C45
C48
C47
C59
C60
C65
BF
SYNC
BLK
SCX
SCG
2SC X
2SC G
H CONT
SC CONT
SCD/180
PRE BLK
9V
5V
RV1
RV2
SEALED CASE


2SA844
2SA925


2SC403C
2SC633A
2SC634A

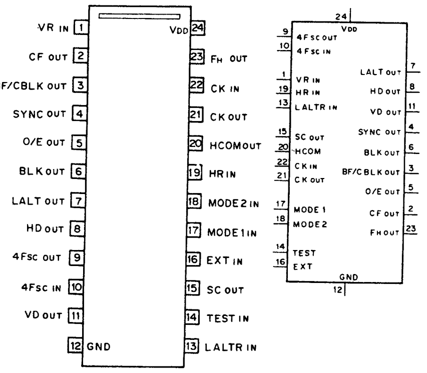

2SC1363
2SC1364



SG-34 BOARD
– SOLDERING SIDE –
1-603-029-14
SEG-2000P/PM
DXC-1800P/PM
SEG-2000AP/APM
CRK-2000P/PM

	※1	※2
PAL	OPEN	SHORT
PAL-M	SHORT	OPEN

CX773A (SONY)
C-MOS SYNC GENERATOR (NTSC, PAL-M, PAL, SECAM)
—TOP VIEW—


VR IN 1
CF OUT 2
BF/CBLK OUT 3
SYNC OUT 4
O/E OUT 5
BLK OUT 6
LALT OUT 7
HD OUT 8
4Fsc OUT 9
4Fsc IN 10
VD OUT 11
12 GND
13 LALTR IN
14 TEST IN
15 SC OUT
16 EXT IN
17 MODE 1 IN
18 MODE 2 IN
19 HR IN
20 HCOM OUT
21 CK OUT
22 CK IN
23 FH OUT
24 VDD
4Fsc OUT
4Fsc IN
VR IN
HR IN
LALTR IN
SC OUT
HCOM
CK IN
CK OUT
MODE 1
MODE 2
TEST
EXT
GND
LALT OUT
HD OUT
VD OUT
SYNC OUT
BLK OUT
BF/CBLK OUT
O/E OUT
CF OUT
FH OUT

O/E : ODD/EVEN FIELD
CF : COLOUR FRAME PULSE
HCOM : H COMPARATOR

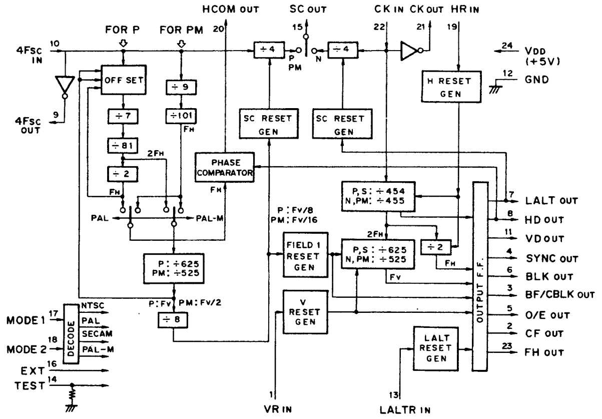
SYSTEM	4Fsc	CLOCK
NTSC	910 FH	910FH
PAL	1135FH+2FV	908FH
PALM	909FH	910FH
SECAM	———	908FH

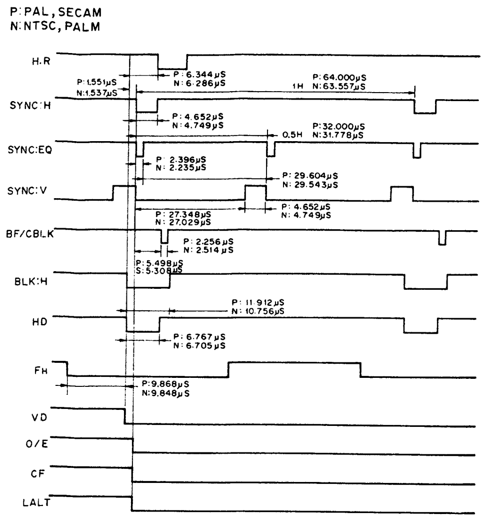
INTUPS		SYSTEM
MODE 1	MODE 2	
0	0	NTSC
0	1	SECAM
1	0	PALM
1	1	PAL

"1" : VDD
"0" : GND

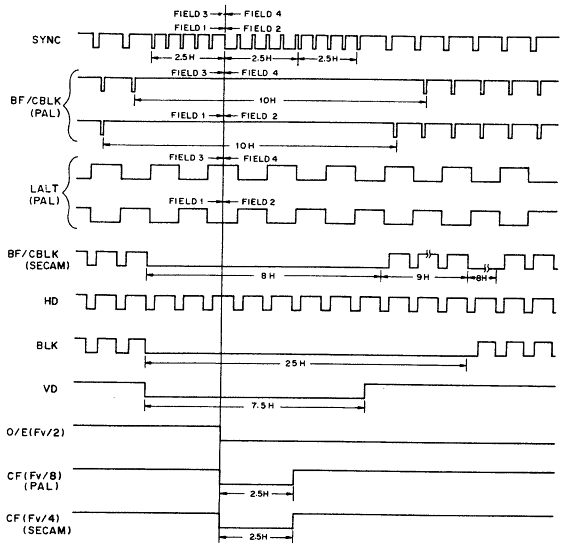
INTUPS		FUNCTION
EXT	TEST	
0	0	INTERNAL
0	1	INVALID
1	0	EXT
1	1	TEST

TEST "0" : OPEN
(INTERNALLY PULLED DOWN)

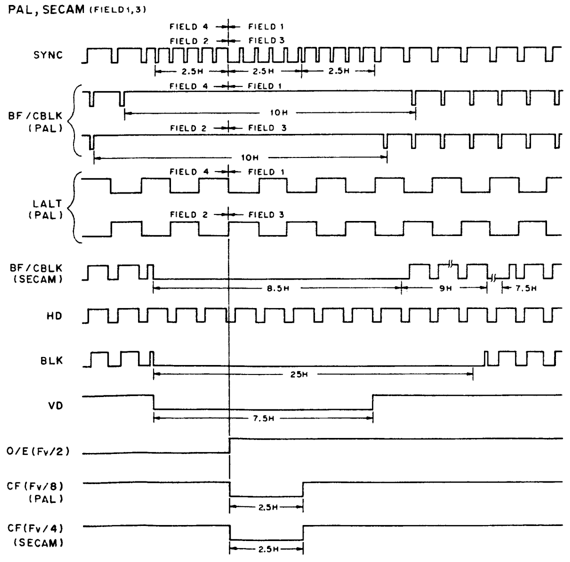

HCOM OUT
SC OUT
CK IN
CK OUT
HR IN
FOR P
FOR PM
4Fsc IN
4Fsc OUT
OFF SET
÷9
÷7
÷101
÷81
÷2
2FH
FH
PAL
PAL-M
P: ÷625
PM: ÷525
P: FV
PM: FV/2
÷8
÷4
P
PM
N
SC RESET GEN
PHASE COMPARATOR
H RESET GEN
VDD (+5V)
GND
P,S: ÷454
N,PM: ÷455
P: FV/8
PM: FV/16
FIELD 1 RESET GEN
P,S: ÷625
N,PM: ÷525
FV
V RESET GEN
LALT RESET GEN
OUTPUT F.F.
LALT OUT
HD OUT
VD OUT
SYNC OUT
BLK OUT
BF/CBLK OUT
O/E OUT
CF OUT
FH OUT
MODE 1
MODE 2
DECODE
NTSC
SECAM
EXT
TEST
VR IN
LALTR IN

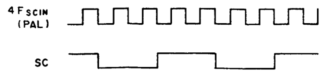


PAL, SECAM (FIELD 4, 2)



PAL, SECAM (FIELD 1, 3)

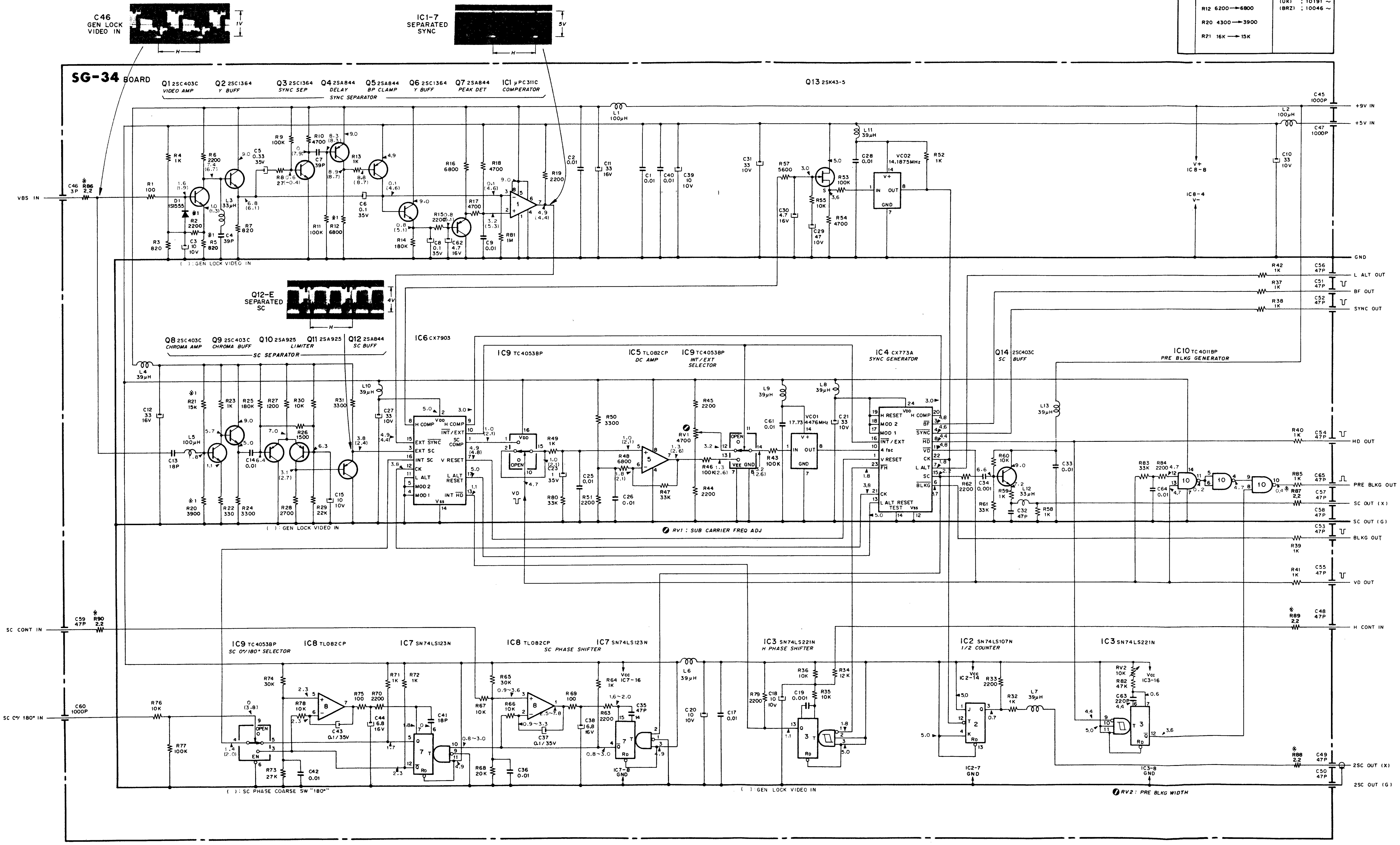




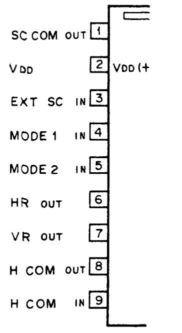
SG-34 BOARD (SYNC GENERATOR SYSTEM)
[For SEG-2000AP/APM use]

NOTE

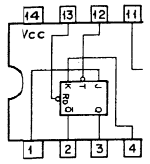
MARK	CHANGE INFORMATION	SERIAL NO.
※	RS 1, 2, 3, 4, 7, 9 ↓ R86, 87, 88, 89, 90(2.2Ω)	(U/C) : 10301~ (J) : 10221~ (AEP) : 10471~ (UK) : 10051~ (BRZ) : 10011~
※1	R2 2400 → 2200 R5 910 → 820 R12 6200 → 6800 R20 4300 → 3900 R21 16K → 15K	(J) ; 10441 ~ (U/C) ; 11261 ~ (AEP) ; 12821 ~ (UK) ; 10191 ~ (BRZ) ; 10046 ~


C46 GEN LOCK VIDEO IN
1V
H
IC1-7 SEPARATED SYNC
5V
SG-34 BOARD
Q1 2SC403C VIDEO AMP
Q2 2SC1364 Y BUFF
Q3 2SC1364 SYNC SEP
Q4 2SA844 DELAY
Q5 2SA844 BP CLAMP
Q6 2SC1364 Y BUFF
Q7 2SA844 PEAK DET
IC1 μPC311C COMPERATOR
SYNC SEPARATOR
Q13 2SK43-5
VBS IN
C46 3P
R86 2.2
D1 1S1555
( ) : GEN LOCK VIDEO IN
Q12-E SEPARATED SC
4V
Q8 2SC403C CHROMA AMP
Q9 2SC403C CHROMA BUFF
Q10 2SA925 LIMITER
Q11 2SA925
Q12 2SA844 SC BUFF
SC SEPARATOR
IC6 CX7903
IC9 TC4053BP
IC5 TL082CP DC AMP
IC9 TC4053BP INT/EXT SELECTOR
IC4 CX773A SYNC GENERATOR
Q14 2SC403C SC BUFF
IC10 TC4011BP PRE BLKG GENERATOR
VCO1 17.734476MHz
VCO2 14.1875MHz
RV1 4700
RV1 : SUB CARRIER FREQ ADJ
+9V IN
+5V IN
GND
L ALT OUT
BF OUT
SYNC OUT
HD OUT
PRE BLKG OUT
SC OUT (X)
SC OUT (G)
BLKG OUT
VD OUT
H CONT IN
2SC OUT (X)
2SC OUT (G)
SC CONT IN
C59 47P
R90 2.2
SC 0°/180° IN
C60 1000P
IC9 TC4053BP SC 0°/180° SELECTOR
IC8 TL082CP
IC7 SN74LS123N
IC8 TL082CP SC PHASE SHIFTER
IC7 SN74LS123N
IC3 SN74LS221N H PHASE SHIFTER
IC2 SN74LS107N 1/2 COUNTER
IC3 SN74LS221N
( ) : SC PHASE COARSE SW "180°"
( ) : GEN LOCK VIDEO IN
RV2 : PRE BLKG WIDTH
IC2-7 GND
IC3-8 GND
IC7-8 GND

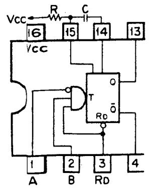
CX7903 (SONY)
CMOS GENLOCK DRIV
— TOP VIEW —


SC COM OUT 1
VDD 2 VDD (+
EXT SC IN 3
MODE 1 IN 4
MODE 2 IN 5
HR OUT 6
VR OUT 7
H COM OUT 8
H COM IN 9

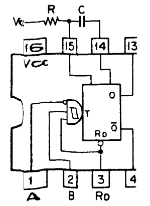
SN74LS107N (TI
TTL J-K FLIP FLOP
—TOP VIEW—


14 13 12 11
Vcc
1 2 3 4

SN74LS123N (TI)
TTL RETRIGGERABL
—TOP VIEW—

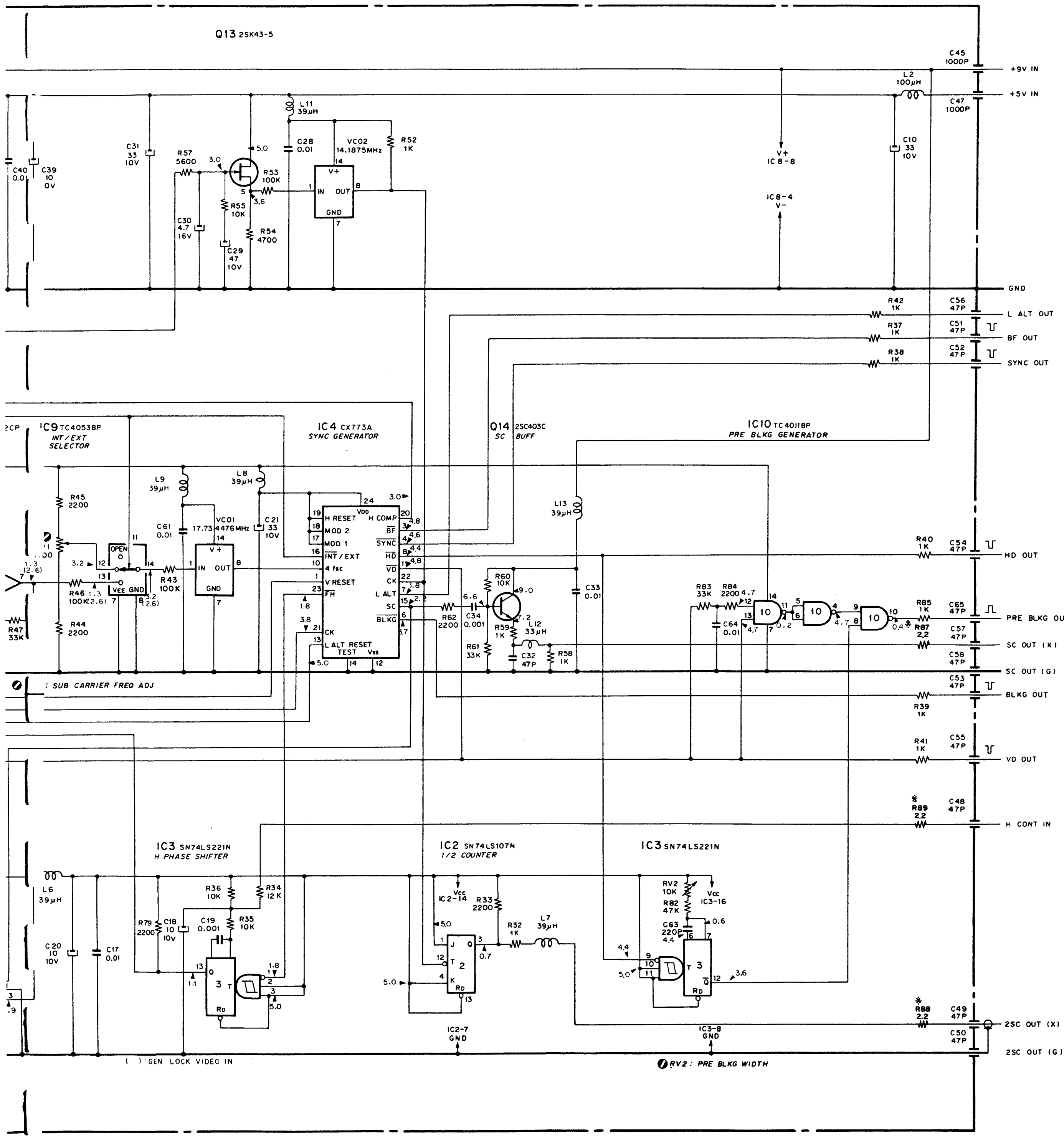

Vcc R C
16 15 14 13
Vcc
T
Q
Rᴅ
1 2 3 4
A B Rᴅ

SI74LS221N (TI
TTL MONOSTABLE
—TOP VIEW—


Vcc R C
16 15 14 13
Vcc
T
Q
Rᴅ
1 2 3 4
A B Rᴅ

NOTE

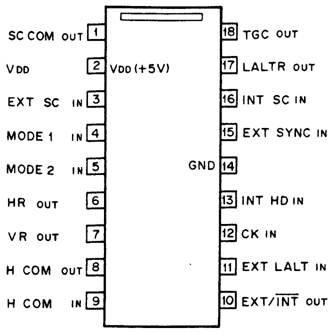
MARK	CHANGE INFORMATION	SERIAL NO.
※	RS 1, 2, 3, 4, 7, 9 ↓ R86, 87, 88, 89, 90 (2.2Ω)	(U/C) : 10301~ (J) : 10221~ (AEP) : 10471~ (UK) : 10051~ (BRZ) : 10011~
※1	R2 2400 → 2200 R5 910 → 820 R12 6200 → 6800 R20 4300 → 3900 R21 16K → 15K	(J) ; 10441 ~ (U/C) ; 11261 ~ (AEP) ; 12821 ~ (UK) ; 10191 ~ (BRZ) ; 10046 ~

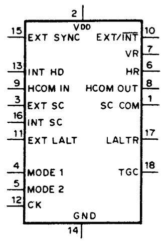

Q13 2SK43-5
C45 1000P
+9V IN
L2 100μH
C47 1000P
+5V IN
L11 39μH
C28 0.01
VCO2 14.1875MHz
R52 1K
C31 33 10V
R57 5600
R53 100K
R55 10K
R54 4700
C30 4.7 16V
C29 47 10V
C40 0.01
C39 10 0V
V+ IC8-8
IC8-4 V-
C10 33 10V
GND
R42 1K
C56 47P
L ALT OUT
R37 1K
C51 47P
BF OUT
R38 1K
C52 47P
SYNC OUT
IC9 TC4053BP INT/EXT SELECTOR
IC4 CX773A SYNC GENERATOR
Q14 2SC403C SC BUFF
IC10 TC4011BP PRE BLKG GENERATOR
R45 2200
L9 39μH
L8 39μH
VCO1 17.734476MHz
C61 0.01
C21 33 10V
H RESET
MOD 2
MOD 1
INT/EXT
4 fsc
V RESET
FH
CK
L ALT RESET
TEST
H COMP
BF
SYNC
HD
VD
L ALT
SC
BLKG
L13 39μH
R60 10K
R62 2200
C34 0.001
R61 33K
R59 1K
L12 33μH
C32 47P
R58 1K
C33 0.01
R83 33K
R84 2200
C64 0.01
R40 1K
C54 47P
HD OUT
R85 1K
C65 47P
PRE BLKG OUT
R87 2.2
C57 47P
SC OUT (X)
C58 47P
SC OUT (G)
C53 47P
BLKG OUT
R39 1K
R46 100K
R43 100K
R44 2200
R47 33K
: SUB CARRIER FREQ ADJ
R41 1K
C55 47P
VD OUT
R89 2.2
C48 47P
H CONT IN
IC3 SN74LS221N H PHASE SHIFTER
IC2 SN74LS107N 1/2 COUNTER
IC3 SN74LS221N
L6 39μH
R36 10K
R34 12K
R79 2200
C18 10 10V
C19 0.001
R35 10K
C20 10 10V
C17 0.01
R33 2200
R32 1K
L7 39μH
IC2-14
IC2-7 GND
RV2 10K
R82 47K
C63 220P
IC3-16
IC3-8 GND
R88 2.2
C49 47P
2SC OUT (X)
C50 47P
2SC OUT (G)
( ) : GEN LOCK VIDEO IN
RV2 : PRE BLKG WIDTH

CX7903 (SONY)

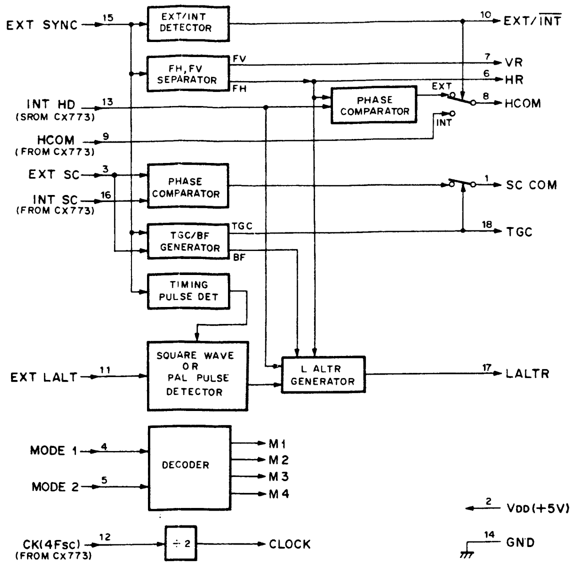
CMOS GENLOCK DRIVER FOR CX773

— TOP VIEW —


SC COM OUT 1
VDD 2
VDD (+5V)
EXT SC IN 3
MODE 1 IN 4
MODE 2 IN 5
HR OUT 6
VR OUT 7
H COM OUT 8
H COM IN 9
18 TGC OUT
17 LALTR OUT
16 INT SC IN
15 EXT SYNC IN
GND 14
13 INT HD IN
12 CK IN
11 EXT LALT IN
10 EXT/INT OUT


2 VDD
15 EXT SYNC
13 INT HD
9 HCOM IN
3 EXT SC
16 INT SC
11 EXT LALT
4 MODE 1
5 MODE 2
12 CK
GND 14
EXT/INT 10
VR 7
HR 6
HCOM OUT 8
SC COM 1
LALTR 17
TGC 18

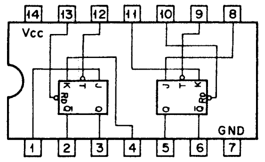
INPUTS		EXT LOCK MODE	
MODE 2	MODE 1		
0	0	M1	PAL: VBS
0	1	M2	PALM: VBS
1	0	M3	PAL: VS/SC/LALT SECAM: VS/SC/LALT
1	1	M4	NTSC: VBS NTSC: VS/SC PALM: VS/SC/LALT


EXT SYNC 15
EXT/INT DETECTOR
FH, FV SEPARATOR
FV
FH
INT HD 13 (SROM CX773)
HCOM 9 (FROM CX773)
EXT SC 3
INT SC 16 (FROM CX773)
PHASE COMPARATOR
PHASE COMPARATOR
EXT
INT
TGC/BF GENERATOR
TGC
BF
TIMING PULSE DET
EXT LALT 11
SQUARE WAVE OR PAL PULSE DETECTOR
L ALTR GENERATOR
MODE 1 4
MODE 2 5
DECODER
M1
M2
M3
M4
CK(4Fsc) 12 (FROM CX773)
÷2
CLOCK
10 EXT/INT
7 VR
6 HR
8 HCOM
1 SC COM
18 TGC
17 LALTR
2 VDD(+5V)
14 GND

SN74LS107N (TI)

TTL J-K FLIP FLOP WITH DIRECT RESET

— TOP VIEW —

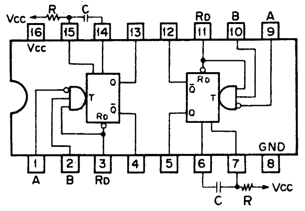

14 13 12 11 10 9 8
Vcc
K T J
RD
Q Q
J T K
RD
GND
1 2 3 4 5 6 7

INPUTS				OUT
RD	T	J	K	Qn+1
L	X	X	X	L
H	⌐↓⌐	L	L	Qn
H	⌐↓⌐	L	H	L
H	⌐↓⌐	H	L	H
H	⌐↓⌐	H	H	$\overline{Q}$n
H	H	X	X	Qn

SN74LS123N (TI)

TTL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR WITH DIRECT RESET

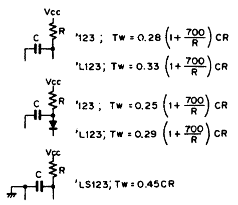
— TOP VIEW —


Vcc
R
C
16 15 14 13 12 11 10 9
RD B A
Vcc
T
Q
$\overline{Q}$
RD
GND
1 2 3 4 5 6 7 8
A B RD
C R
Vcc

INPUTS			OUTPUTS	
RD	A	B	Q	$\overline{Q}$
0	X	X	0	1
X	1	X	0	1
X	X	1	0	1
1	0	↑	⎍	⊔
1	↓	1	⎍	⊔
↑	0	1	⎍	⊔

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

OUTPUT PULSE WIDTH



'123 ; $T_W = 0.28\left(1+\frac{700}{R}\right)CR$

'L123; $T_W = 0.33\left(1+\frac{700}{R}\right)CR$

'123 ; $T_W = 0.25\left(1+\frac{700}{R}\right)CR$

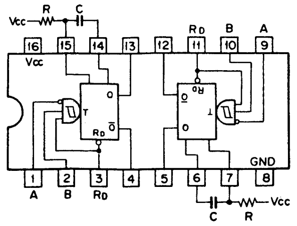
'L123; $T_W = 0.29\left(1+\frac{700}{R}\right)CR$

'LS123; $T_W = 0.45CR$

SN74LS221N (TI)

TTL MONOSTABLE MULTIVIBRATOR WITH SCHMITT TRIGGER INPUT

— TOP VIEW —


Vcc
R
C
16 15 14 13 12 11 10 9
RD B A
Vcc
T
Q
$\overline{Q}$
RD
GND
1 2 3 4 5 6 7 8
A B RD
C R
Vcc

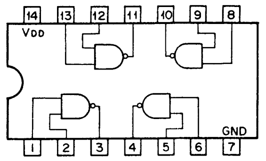
INPUTS			OUTPUTS	
RD	A	B	Q	$\overline{Q}$
L	X	X	L	H
X	H	X	L	H
X	X	L	L	H
H	L	↑	⎍	⊔
H	↓	H	⎍	⊔
↑	L	H	⎍	⊔

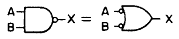
OUTPUT PULSE WIDTH = 0.7CR

TC4011BP (TOSHIBA)

C-MOS 2-INPUT NAND GATE

— TOP VIEW —


14 13 12 11 10 9 8
VDD
GND
1 2 3 4 5 6 7



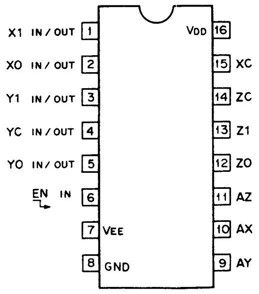
$X = \overline{A \cdot B} = \overline{A} + \overline{B}$

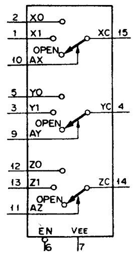
A	B	X
0	0	1
0	1	1
1	0	1
1	1	0

TC4053BP (TOSHIBA)

C-MOS 2-CHANNEL MULTIPLEXER / DEMULTIPLEXER

— TOP VIEW —


X1 IN/OUT 1
XO IN/OUT 2
Y1 IN/OUT 3
YC IN/OUT 4
YO IN/OUT 5
EN IN 6
7 VEE
8 GND
VDD 16
15 XC IN/OUT
14 ZC IN/OUT
13 Z1 IN/OUT
12 ZO IN/OUT
11 AZ IN/OUT
10 AX IN/OUT
9 AY IN/OUT


2 XO
1 X1
OPEN
10 AX
XC 15
5 YO
3 Y1
OPEN
9 AY
YC 4
12 ZO
13 Z1
OPEN
11 AZ
ZC 14
EN
VEE
6
7

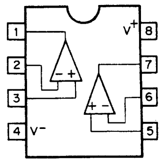
CONT. INPUTS		ON CHANNEL
EN	A (X,Y,Z,)	
0	0	0
0	1	1
1	X	OPEN

TL082CP (TI)

OPERATIONAL AMPLIFIER

(JFET- INPUT)

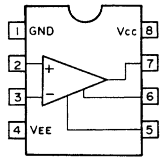
- TOP VIEW -


1
2
3
4 V-
V+ 8
7
6
5
- +
+ -

μPC311C (NEC)

VOLTAGE COMPARATOR

-TOP VIEW-

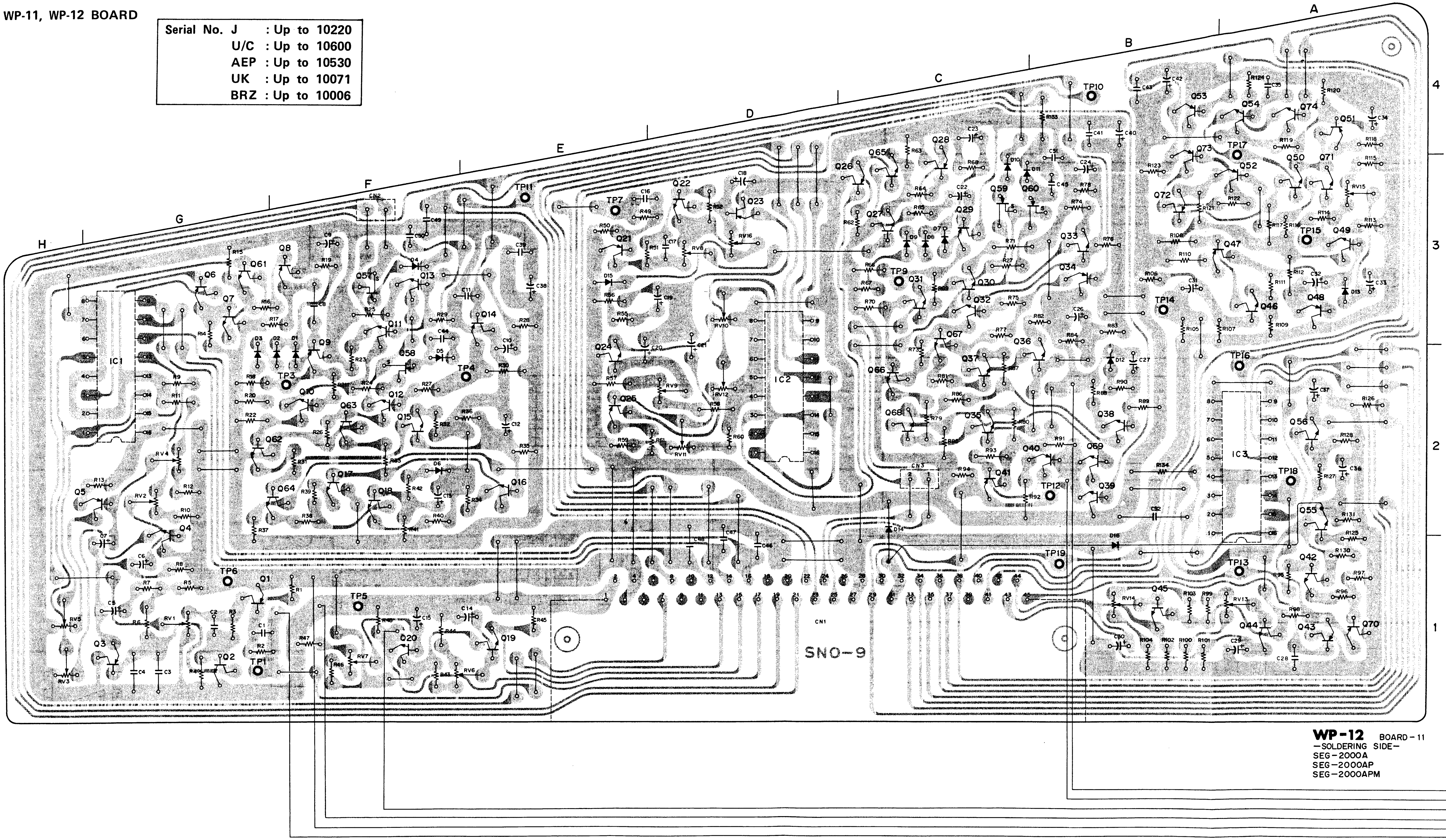

1 GND
2
3
4 VEE
Vcc 8
7
6
5
+
-

NOTE:

1. All voltage are measured with a digital voltmeter (input impedance 10MΩ).
2. Waveform photographs are taken under the following conditions:
   - Color bar signal (1 Vp-p) input to "VIDEO IN"

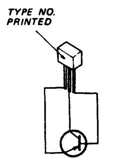
WP-11, WP-12 BOARD

Serial No.		
J	: Up to	10220
U/C	: Up to	10600
AEP	: Up to	10530
UK	: Up to	10071
BRZ	: Up to	10006

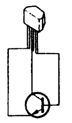

A
B
C
D
E
F
G
H
4
3
2
1
IC1
IC2
IC3
CN1
CN2
CN3
SNO-9
TP1
TP3
TP4
TP5
TP6
TP7
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19

WP-12 BOARD-11
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

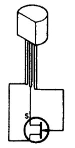
CN1	D-1
CN2	F-3
CN3	C-2
D1	F-3
D2	F-3
D3	G-3
D4	F-3
D5	F-2
D6	F-2
D7	C-3
D8	C-3
D9	C-3
D10	C-3
D11	C-3
D12	B-2
D13	A-3
D14	C-2
D15	E-3
IC1	G-2
IC2	D-2
IC3	A-2
Q1	G-1
Q2	G-1
Q3	G-1
Q4	G-2
Q5	G-2
Q6	G-3
Q7	G-3
Q8	F-3
Q9	F-3
Q10	F-2
Q11	F-3
Q12	F-2
Q13	F-3
Q14	E-3
Q15	F-2
Q16	E-2
Q17	F-2
Q18	F-2
Q19	E-1
Q20	F-1
Q21	E-3
Q22	D-3
Q23	D-3
Q24	E-2
Q25	E-2
Q26	C-3
Q27	C-3
Q28	C-3
Q29	C-3
Q30	C-3
Q31	C-3
Q32	C-3
Q33	B-3
Q34	B-3
Q35	C-2
Q36	B-2
Q37	C-2
Q38	B-2
Q39	B-2
Q40	B-2
Q41	C-2
Q42	A-1
Q43	A-1
Q44	A-1
Q45	B-1
Q46	A-3
Q47	A-3
Q48	A-3
Q49	A-3
Q50	A-3
Q51	A-4
Q52	A-3
Q53	B-4
Q54	A-4
Q55	A-2
Q56	A-2
Q57	F-3
Q58	F-2
Q59	C-3
Q60	B-3
Q61	G-3
Q62	G-2
Q63	F-2
Q64	G-2
Q65	C-3
Q66	C-2
Q67	C-3
Q68	C-2
Q69	B-2
Q70	A-1
Q71	A-3
Q72	B-3
Q73	B-4
Q74	A-4
RV1	
RV2	G-2
RV3	H-1
RV4	
RV5	H-1
RV6	F-1
RV7	F-1
RV8	D-3
RV9	D-2
RV10	D-3
RV11	D-2
RV12	D-2
RV13	
RV14	
RV15	A-3
RV16	D-3
TP1	G-1
TP3	F-2
TP4	E-2
TP5	F-1
TP6	G-1
TP7	E-3
TP8	A-2
TP9	C-3
TP10	B-4
TP11	E-3
TP12	B-2
TP13	A-1
TP14	B-3
TP15	A-3
TP16	A-2
TP17	A-4
TP18	A-2
TP19	B-1


TYPE NO. PRINTED

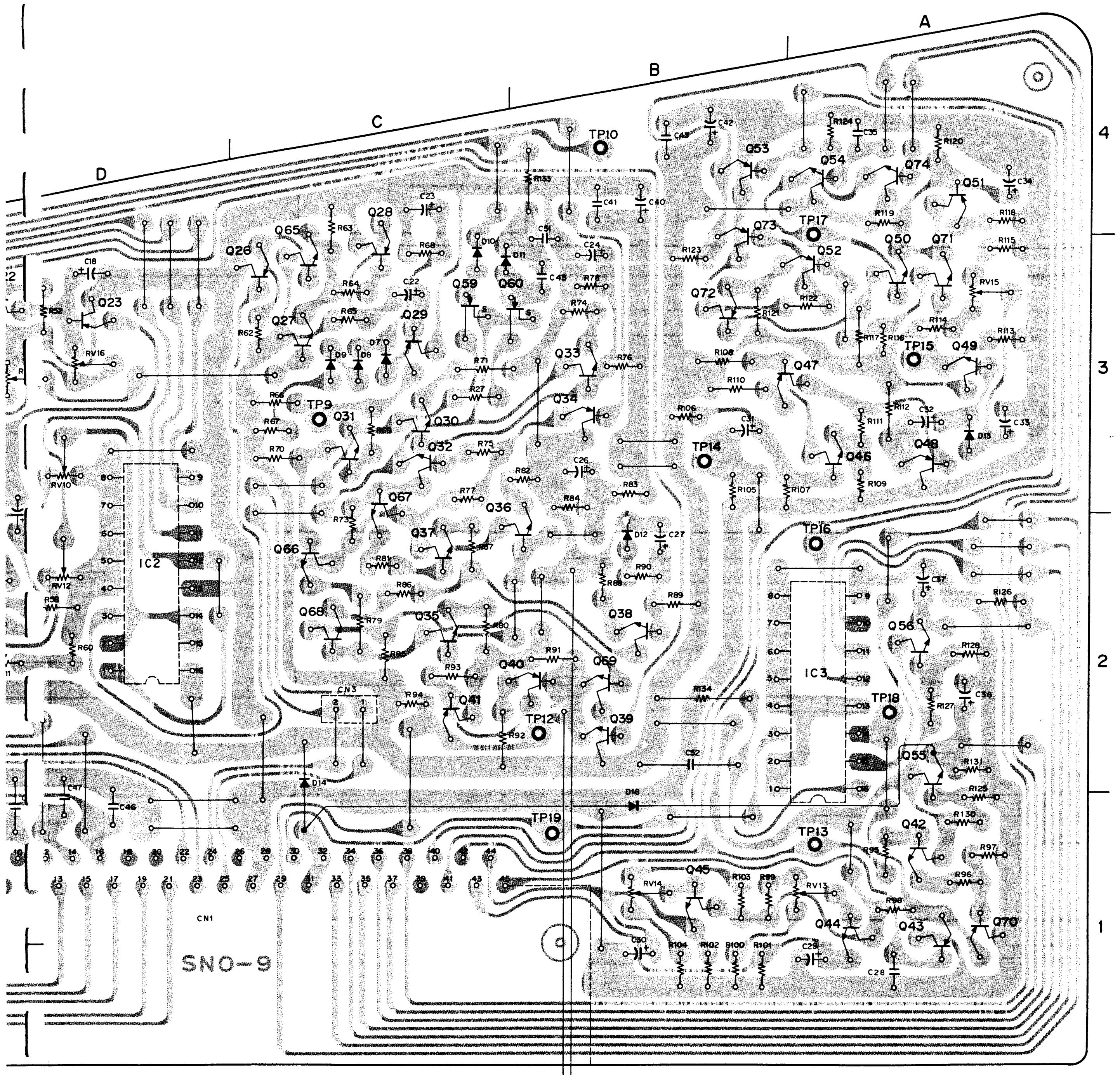
2SA1175



2SC2603



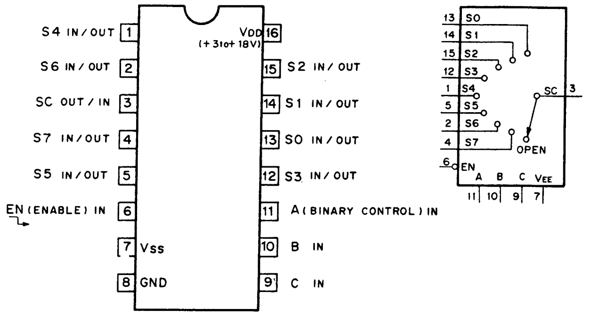
2SK43


A
B
C
D
4
3
2
1
TP10
TP17
TP9
TP15
TP14
TP16
TP18
TP12
TP19
TP13
IC2
IC3
CN3
CN1
SNO-9
Q23
Q26
Q65
Q28
Q27
Q29
Q59
Q60
Q31
Q30
Q32
Q33
Q34
Q53
Q54
Q74
Q51
Q73
Q52
Q50
Q71
Q72
Q47
Q49
Q46
Q48
Q67
Q36
Q37
Q66
Q68
Q35
Q38
Q56
Q40
Q69
Q41
Q39
Q55
Q42
Q45
Q44
Q43
Q70
RV16
RV10
RV12
RV15
RV14
RV13
D14
D15
D12
D13

WP-12 BOARD-11
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

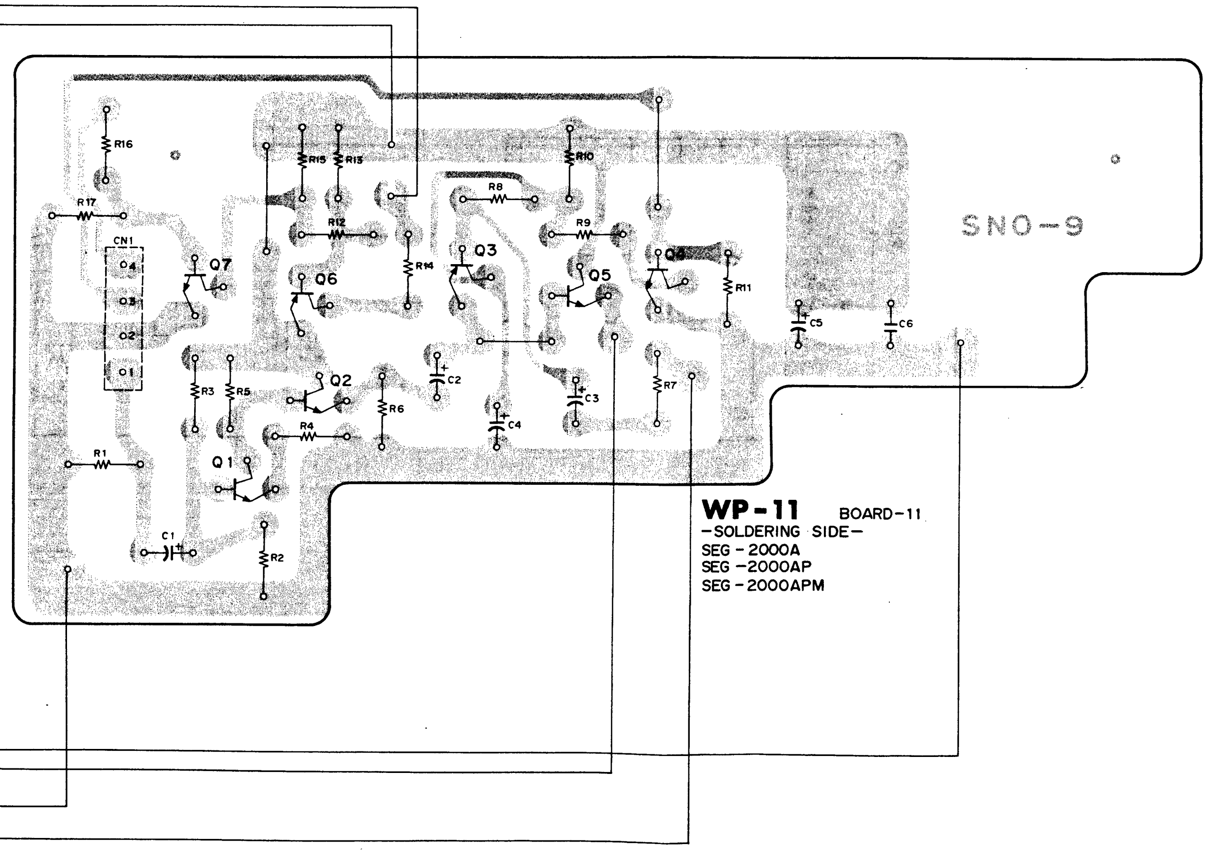
CN1	D-1
CN2	F-3
CN3	C-2
D1	F-3
D2	F-3
D3	G-3
D4	F-3
D5	F-2
D6	F-2
D7	C-3
D8	C-3
D9	C-3
D10	C-3
D11	C-3
D12	B-2
D13	A-3
D14	C-2
D15	E-3
IC1	G-2
IC2	D-2
IC3	A-2
Q1	G-1
Q2	G-1
Q3	G-1
Q4	G-2
Q5	G-2
Q6	G-3
Q7	G-3
Q8	F-3
Q9	F-3
Q10	F-2
Q11	F-3
Q12	F-2
Q13	F-3
Q14	E-3
Q15	F-2
Q16	E-2
Q17	F-2
Q18	F-2
Q19	E-1
Q20	F-1
Q21	E-3
Q22	D-3
Q23	D-3
Q24	E-2
Q25	E-2
Q26	C-3
Q27	C-3
Q28	C-3
Q29	C-3
Q30	C-3
Q31	C-3
Q32	C-3
Q33	B-3
Q34	B-3
Q35	C-2
Q36	B-2
Q37	C-2
Q38	B-2
Q39	B-2
Q40	B-2
Q41	C-2
Q42	A-1
Q43	A-1
Q44	A-1
Q45	B-1
Q46	A-3
Q47	A-3
Q48	A-3
Q49	A-3
Q50	A-3
Q51	A-4
Q52	A-3
Q53	B-4
Q54	A-4
Q55	A-2
Q56	A-2
Q57	F-3
Q58	F-2
Q59	C-3
Q60	B-3
Q61	G-3
Q62	G-2
Q63	F-2
Q64	G-2
Q65	C-3
Q66	C-2
Q67	C-3
Q68	C-2
Q69	B-2
Q70	A-1
Q71	A-3
Q72	B-3
Q73	B-4
Q74	A-4
RV1	
RV2	G-2
RV3	H-1
RV4	
RV5	H-1
RV6	F-1
RV7	F-1
RV8	D-3
RV9	D-2
RV10	D-3
RV11	D-2
RV12	D-2
RV13	
RV14	
RV15	A-3
RV16	D-3
TP1	G-1
TP3	F-2
TP4	E-2
TP5	F-1
TP6	G-1
TP7	E-3
TP8	A-2
TP9	C-3
TP10	B-4
TP11	E-3
TP12	B-2
TP13	A-1
TP14	B-3
TP15	A-3
TP16	A-2
TP17	A-4
TP18	A-2
TP19	B-1

TC4051BP (TOSHIBA)
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —


S4 IN/OUT 1
S6 IN/OUT 2
SC OUT/IN 3
S7 IN/OUT 4
S5 IN/OUT 5
EN (ENABLE) IN 6
7 Vss
8 GND
VDD (+3 to +18V) 16
15 S2 IN/OUT
14 S1 IN/OUT
13 S0 IN/OUT
12 S3 IN/OUT
11 A (BINARY CONTROL) IN
10 B IN
9 C IN
13 S0
14 S1
15 S2
12 S3
1 S4
5 S5
2 S6
4 S7
SC 3
OPEN
6 EN
A B C VEE
11 10 9 7

EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

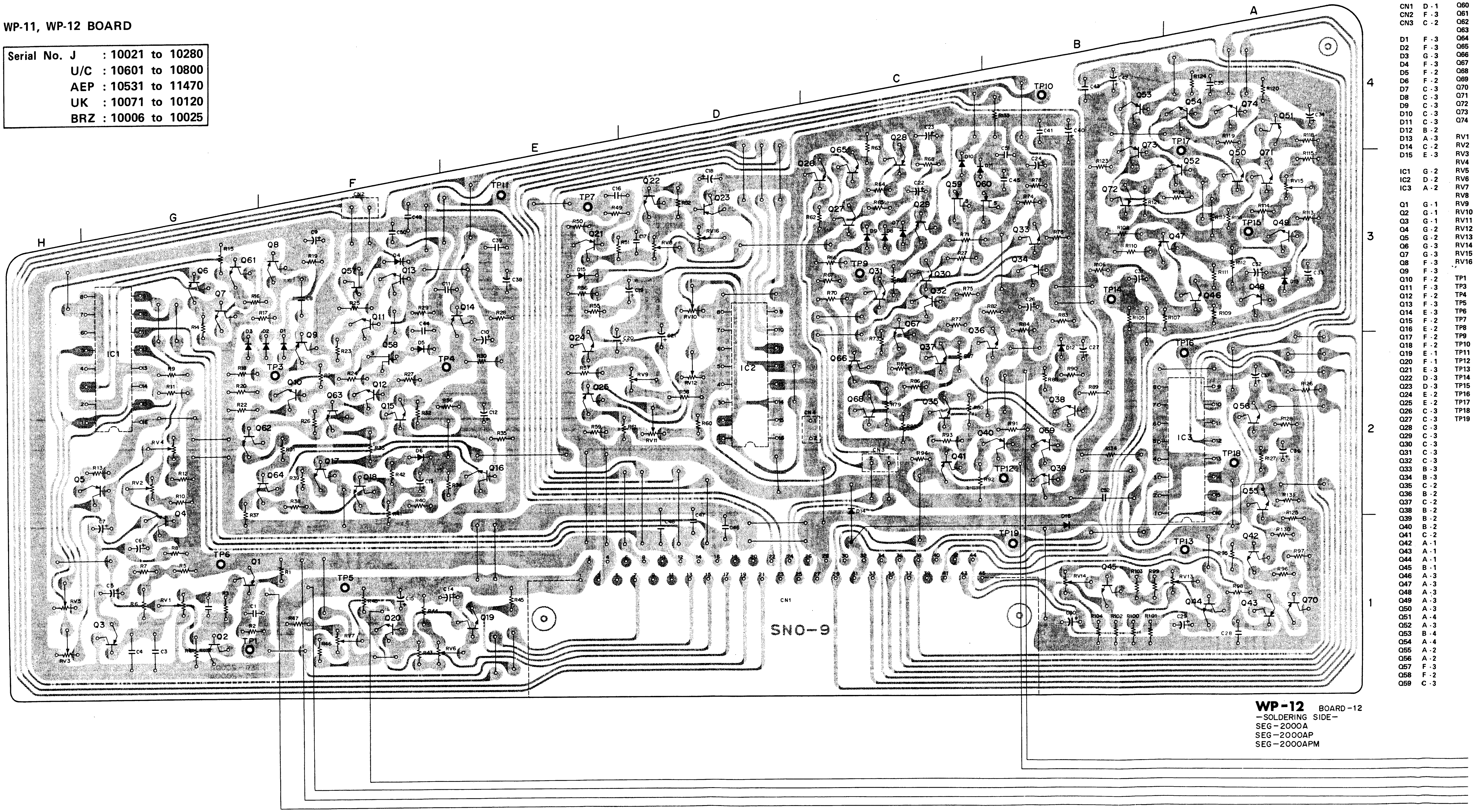
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE


SNO-9
CN1
Q1
Q2
Q3
Q4
Q5
Q6
Q7
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
R17
C1
C2
C3
C4
C5
C6

WP-11 BOARD-11
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

WP-11, WP-12 BOARD

Serial No.				
J	: 10021	to	10280
U/C	: 10601	to	10800
AEP	: 10531	to	11470
UK	: 10071	to	10120
BRZ	: 10006	to	10025

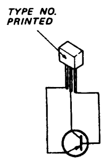

A
B
C
D
E
F
G
H
4
3
2
1
IC1
IC2
IC3
CN1
CN2
CN3
SNO-9
TP1
TP3
TP4
TP5
TP6
TP7
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
WP-12 BOARD-12
—SOLDERING SIDE—
SEG-2000A
SEG-2000AP
SEG-2000APM

CN1	D-1
CN2	F-3
CN3	C-2
D1	F-3
D2	F-3
D3	G-3
D4	F-3
D5	F-2
D6	F-2
D7	C-3
D8	C-3
D9	C-3
D10	C-3
D11	C-3
D12	B-2
D13	A-3
D14	C-2
D15	E-3
IC1	G-2
IC2	D-2
IC3	A-2
Q1	G-1
Q2	G-1
Q3	G-1
Q4	G-2
Q5	G-2
Q6	G-3
Q7	G-3
Q8	F-3
Q9	F-3
Q10	F-2
Q11	F-3
Q12	F-2
Q13	F-3
Q14	E-3
Q15	F-2
Q16	E-2
Q17	F-2
Q18	F-2
Q19	E-1
Q20	F-1
Q21	E-3
Q22	D-3
Q23	D-3
Q24	E-2
Q25	E-2
Q26	C-3
Q27	C-3
Q28	C-3
Q29	C-3
Q30	C-3
Q31	C-3
Q32	C-3
Q33	B-3
Q34	B-3
Q35	C-2
Q36	B-2
Q37	C-2
Q38	B-2
Q39	B-2
Q40	B-2
Q41	C-2
Q42	A-1
Q43	A-1
Q44	A-1
Q45	B-1
Q46	A-3
Q47	A-3
Q48	A-3
Q49	A-3
Q50	A-3
Q51	A-4
Q52	A-3
Q53	B-4
Q54	A-4
Q55	A-2
Q56	A-2
Q57	F-3
Q58	F-2
Q59	C-3

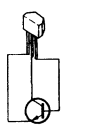
Q60
Q61
Q62
Q63
Q64
Q65
Q66
Q67
Q68
Q69
Q70
Q71
Q72
Q73
Q74

RV1
RV2
RV3
RV4
RV5
RV6
RV7
RV8
RV9
RV10
RV11
RV12
RV13
RV14
RV15
RV16

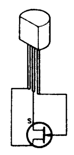
TP1
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19


TYPE NO.
PRINTED

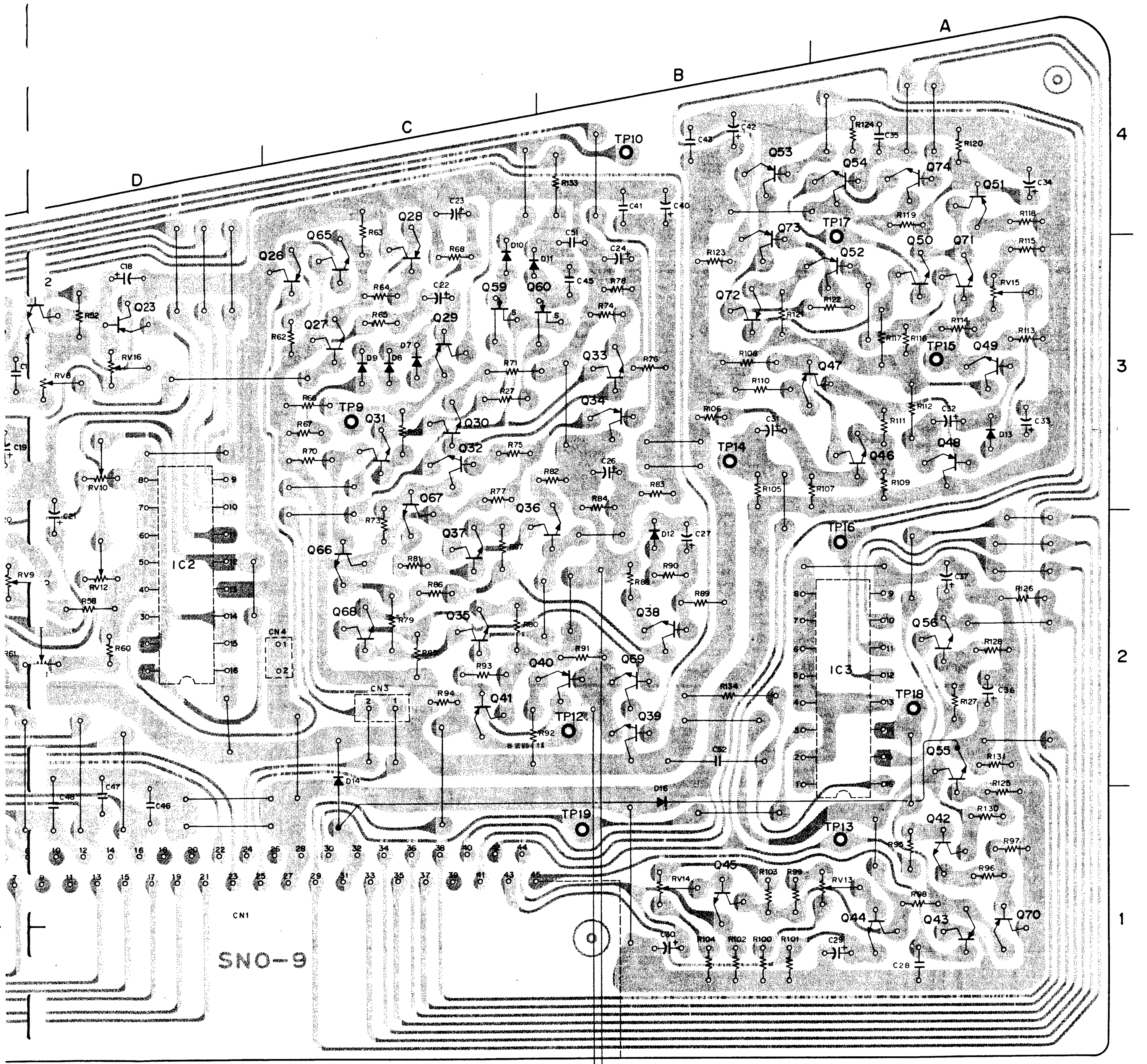
2SA1175



2SC2603



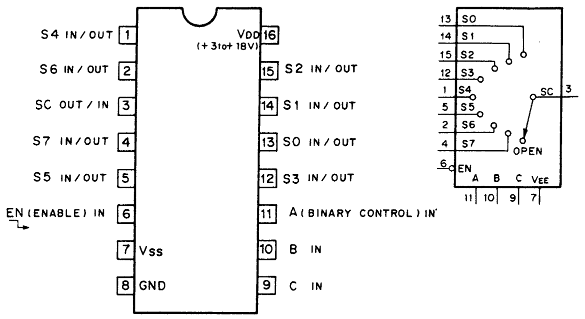
2SK43


A
B
C
D
4
3
2
1
IC2
IC3
CN1
CN3
CN4
TP9
TP10
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19
SNO-9

WP-12 BOARD-12
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

CN1	D-1	Q60	B-3
CN2	F-3	Q61	G-3
CN3	C-2	Q62	G-2
		Q63	F-2
D1	F-3	Q64	G-2
D2	F-3	Q65	C-3
D3	G-3	Q66	C-2
D4	F-3	Q67	C-3
D5	F-2	Q68	C-2
D6	F-2	Q69	B-2
D7	C-3	Q70	A-1
D8	C-3	Q71	A-3
D9	C-3	Q72	B-3
D10	C-3	Q73	B-4
D11	C-3	Q74	A-4
D12	B-2		
D13	A-3	RV1	
D14	C-2	RV2	G-2
D15	E-3	RV3	H-1
		RV4	
IC1	G-2	RV5	H-1
IC2	D-2	RV6	F-1
IC3	A-2	RV7	F-1
		RV8	D-3
Q1	G-1	RV9	D-2
Q2	G-1	RV10	D-3
Q3	G-1	RV11	D-2
Q4	G-2	RV12	D-2
Q5	G-2	RV13	
Q6	G-3	RV14	
Q7	G-3	RV15	A-3
Q8	F-3	RV16	D-3
Q9	F-3		
Q10	F-2	TP1	G-1
Q11	F-3	TP3	F-2
Q12	F-2	TP4	E-2
Q13	F-3	TP5	F-1
Q14	E-3	TP6	G-1
Q15	F-2	TP7	E-3
Q16	E-2	TP8	A-2
Q17	F-2	TP9	C-3
Q18	F-2	TP10	B-4
Q19	E-1	TP11	E-3
Q20	F-1	TP12	B-2
Q21	E-3	TP13	A-1
Q22	D-3	TP14	B-3
Q23	D-3	TP15	A-3
Q24	E-2	TP16	A-2
Q25	E-2	TP17	A-4
Q26	C-3	TP18	A-2
Q27	C-3	TP19	B-1
Q28	C-3		
Q29	C-3		
Q30	C-3		
Q31	C-3		
Q32	C-3		
Q33	B-3		
Q34	B-3		
Q35	C-2		
Q36	B-2		
Q37	C-2		
Q38	B-2		
Q39	B-2		
Q40	B-2		
Q41	C-2		
Q42	A-1		
Q43	A-1		
Q44	A-1		
Q45	B-1		
Q46	A-3		
Q47	A-3		
Q48	A-3		
Q49	A-3		
Q50	A-3		
Q51	A-4		
Q52	A-3		
Q53	B-4		
Q54	A-4		
Q55	A-2		
Q56	A-2		
Q57	F-3		
Q58	F-2		
Q59	C-3		

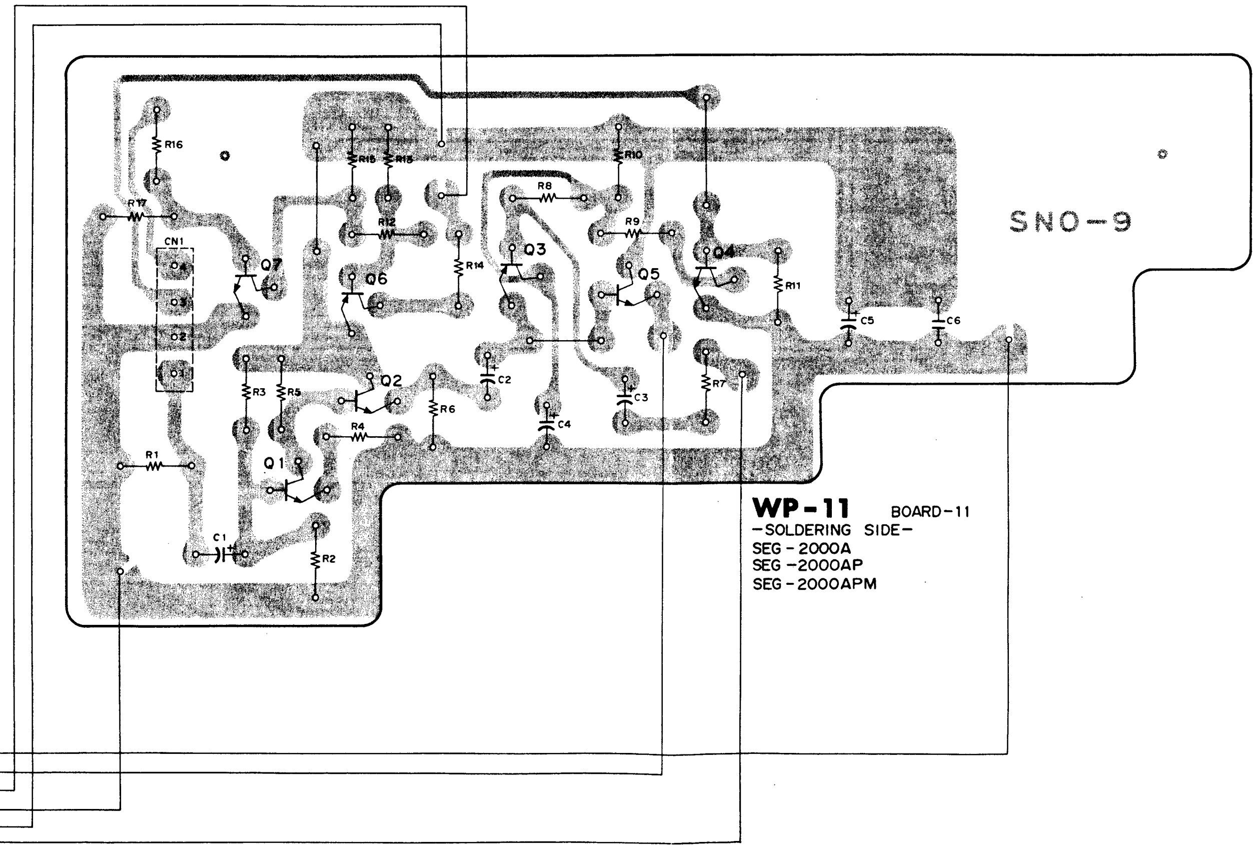
TC4051BP (TOSHIBA)
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —


S4 IN/OUT 1
S6 IN/OUT 2
SC OUT/IN 3
S7 IN/OUT 4
S5 IN/OUT 5
EN (ENABLE) IN 6
7 Vss
8 GND
VDD 16 (+3to+18V)
15 S2 IN/OUT
14 S1 IN/OUT
13 S0 IN/OUT
12 S3 IN/OUT
11 A (BINARY CONTROL) IN
10 B IN
9 C IN
13 S0
14 S1
15 S2
12 S3
1 S4
5 S5
2 S6
4 S7
6 EN
SC 3
OPEN
A B C VEE
11 10 9 7

EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

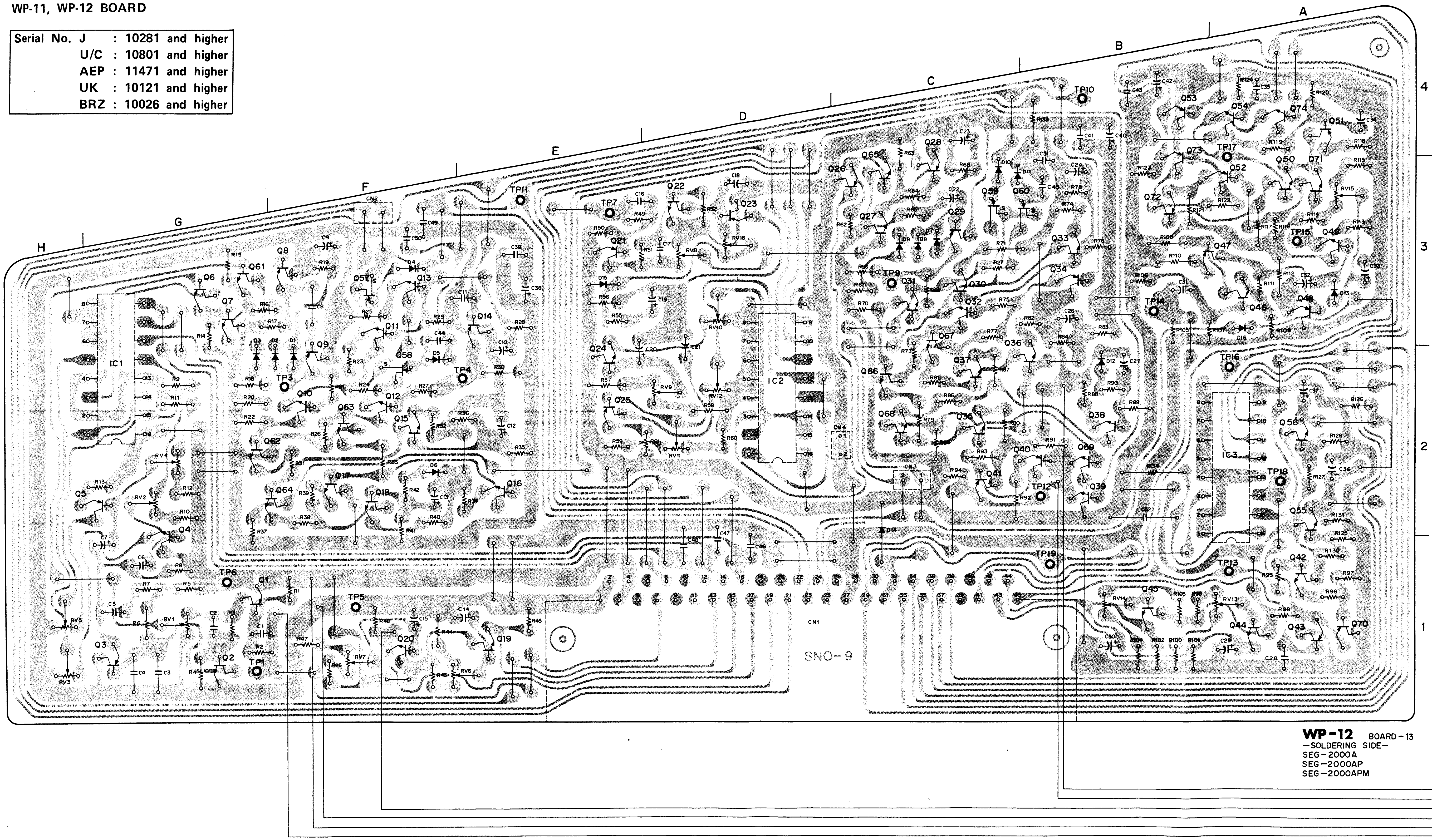
Serial No.		
J	:	Up to 10280
U/C	:	Up to 10800
AEP	:	Up to 11470
UK	:	Up to 10120
BRZ	:	Up to 10025


SNO-9
CN1
Q1
Q2
Q3
Q4
Q5
Q6
Q7

WP-11 BOARD-11
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

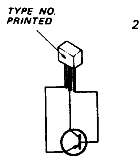
WP-11, WP-12 BOARD

Serial No.		
J	:	10281 and higher
U/C	:	10801 and higher
AEP	:	11471 and higher
UK	:	10121 and higher
BRZ	:	10026 and higher

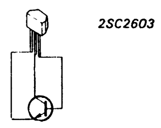

A
B
C
D
E
F
G
H
4
3
2
1
IC1
IC2
IC3
CN1
CN2
CN3
CN4
SNO-9
TP1
TP3
TP4
TP5
TP6
TP7
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16
TP17
TP18
TP19

CN1	D - 1
CN2	F - 3
CN3	C - 2
D1	F - 3
D2	F - 3
D3	G - 3
D4	F - 3
D5	F - 2
D6	F - 2
D7	C - 3
D8	C - 3
D9	C - 3
D10	C - 3
D11	C - 3
D12	B - 2
D13	A - 3
D14	C - 2
D15	E - 3
D16	A - 3
IC1	G - 2
IC2	D - 2
IC3	A - 2
Q1	G - 1
Q2	G - 1
Q3	G - 1
Q4	G - 2
Q5	G - 2
Q6	G - 3
Q7	G - 3
Q8	F - 3
Q9	F - 3
Q10	F - 2
Q11	F - 3
Q12	F - 2
Q13	F - 3
Q14	E - 3
Q15	F - 2
Q16	E - 2
Q17	F - 2
Q18	F - 2
Q19	E - 1
Q20	F - 1
Q21	E - 3
Q22	D - 3
Q23	D - 3
Q24	E - 2
Q25	E - 2
Q26	C - 3
Q27	C - 3
Q28	C - 3
Q29	C - 3
Q30	C - 3
Q31	C - 3
Q32	C - 3
Q33	B - 3
Q34	B - 3
Q35	C - 2
Q36	B - 2
Q37	C - 2
Q38	B - 2
Q39	B - 2
Q40	B - 2
Q41	C - 2
Q42	A - 1
Q43	A - 1
Q44	A - 1
Q45	B - 1
Q46	A - 3
Q47	A - 3
Q48	A - 3
Q49	A - 3
Q50	A - 3
Q51	A - 4
Q52	A - 3
Q53	B - 4
Q54	A - 4
Q55	A - 2
Q56	A - 2
Q57	F - 3
Q58	F - 2
Q59	C - 3
Q60	B - 3
Q61	G - 3
Q62	G - 2
Q63	F - 2
Q64	G - 2
Q65	C - 3
Q66	C - 2
Q67	C - 3
Q68	C - 2
Q69	B - 2
Q70	A - 1
Q71	A - 3
Q72	B - 3
Q73	B - 4
Q74	A - 4
RV1	
RV2	G - 2
RV3	H - 1
RV4	
RV5	H - 1
RV6	F - 1
RV7	F - 1
RV8	D - 3
RV9	D - 2
RV10	D - 3
RV11	D - 2
RV12	D - 2
RV13	
RV14	
RV15	A - 3
RV16	D - 3
TP1	G - 1
TP3	F - 2
TP4	E - 2
TP5	F - 1
TP6	G - 1
TP7	E - 3
TP8	A - 2
TP9	C - 3
TP10	B - 4
TP11	E - 3
TP12	B - 2
TP13	A - 1
TP14	B - 3
TP15	A - 3
TP16	A - 2
TP17	A - 4
TP18	A - 2
TP19	B - 1

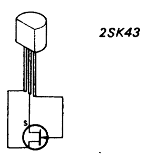
WP-12 BOARD-13
—SOLDERING SIDE—
SEG-2000A
SEG-2000AP
SEG-2000APM


TYPE NO. PRINTED

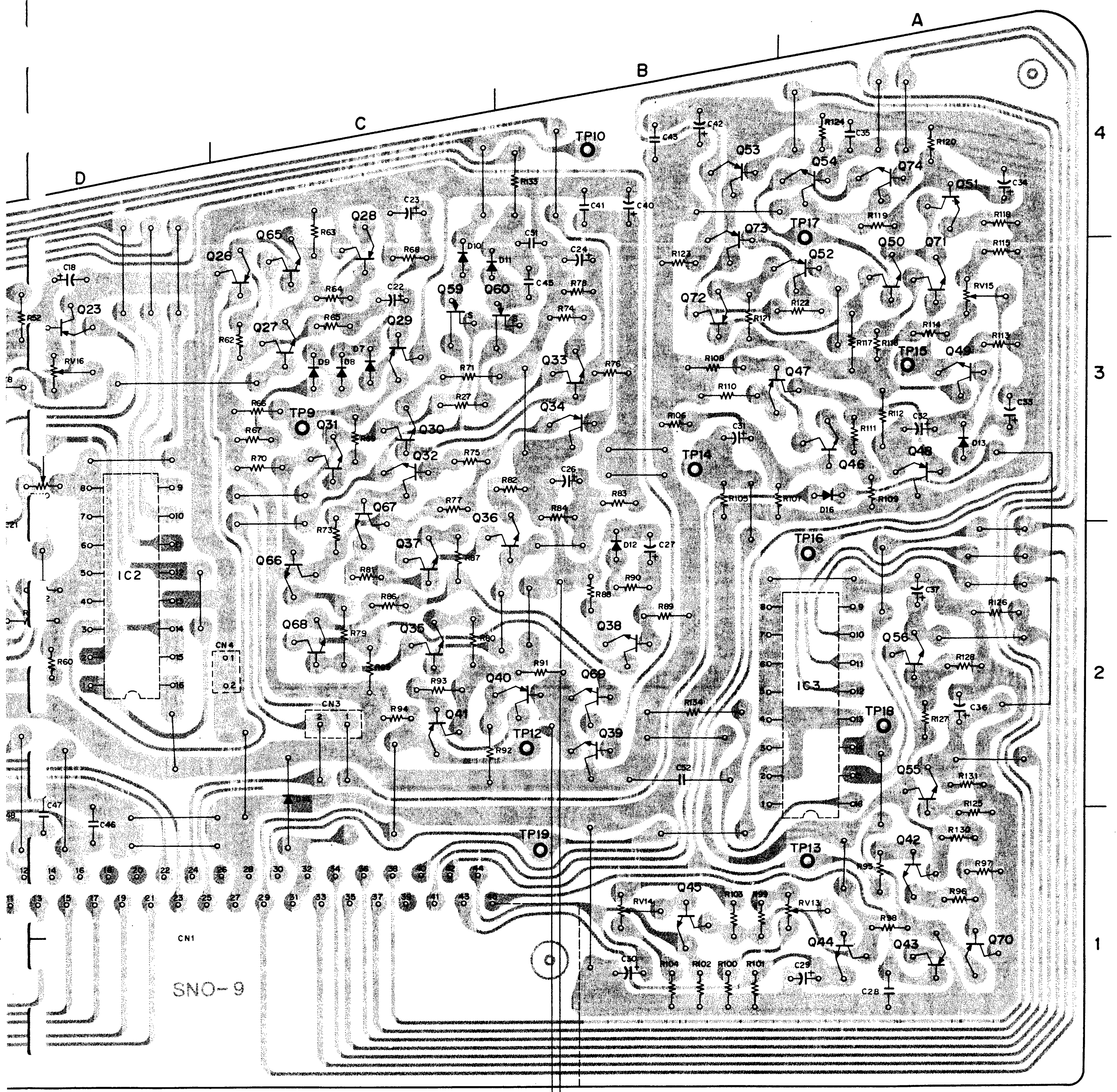
2SA1175



2SC2603



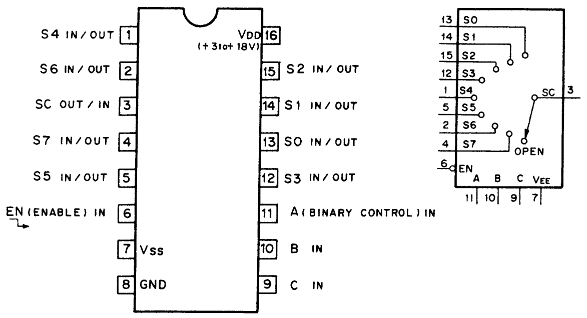
2SK43


A
B
C
D
4
3
2
1
TP10
TP17
TP9
TP14
TP16
TP15
TP12
TP18
TP19
TP13
IC2
IC3
CN1
CN3
CN4
SNO-9

WP-12 BOARD-13
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

CN1	D-1	Q60	B-3
CN2	F-3	Q61	G-3
CN3	C-2	Q62	G-2
		Q63	F-2
D1	F-3	Q64	G-2
D2	F-3	Q65	C-3
D3	G-3	Q66	C-2
D4	F-3	Q67	C-3
D5	F-2	Q68	C-2
D6	F-2	Q69	B-2
D7	C-3	Q70	A-1
D8	C-3	Q71	A-3
D9	C-3	Q72	B-3
D10	C-3	Q73	B-4
D11	C-3	Q74	A-4
D12	B-2		
D13	A-3	RV1	
D14	C-2	RV2	G-2
D15	E-3	RV3	H-1
D16	A-3	RV4	
		RV5	H-1
IC1	G-2	RV6	F-1
IC2	D-2	RV7	F-1
IC3	A-2	RV8	D-3
		RV9	D-2
Q1	G-1	RV10	D-3
Q2	G-1	RV11	D-2
Q3	G-1	RV12	D-2
Q4	G-2	RV13	
Q5	G-2	RV14	
Q6	G-3	RV15	A-3
Q7	G-3	RV16	D-3
Q8	F-3		
Q9	F-3	TP1	G-1
Q10	F-2	TP3	F-2
Q11	F-3	TP4	E-2
Q12	F-2	TP5	F-1
Q13	F-3	TP6	G-1
Q14	E-3	TP7	E-3
Q15	F-2	TP8	A-2
Q16	E-2	TP9	C-3
Q17	F-2	TP10	B-4
Q18	F-2	TP11	E-3
Q19	E-1	TP12	B-2
Q20	F-1	TP13	A-1
Q21	E-3	TP14	B-3
Q22	D-3	TP15	A-3
Q23	D-3	TP16	A-2
Q24	E-2	TP17	A-4
Q25	E-2	TP18	A-2
Q26	C-3	TP19	B-1
Q27	C-3		
Q28	C-3		
Q29	C-3		
Q30	C-3		
Q31	C-3		
Q32	C-3		
Q33	B-3		
Q34	B-3		
Q35	C-2		
Q36	B-2		
Q37	C-2		
Q38	B-2		
Q39	B-2		
Q40	B-2		
Q41	C-2		
Q42	A-1		
Q43	A-1		
Q44	A-1		
Q45	B-1		
Q46	A-3		
Q47	A-3		
Q48	A-3		
Q49	A-3		
Q50	A-3		
Q51	A-4		
Q52	A-3		
Q53	B-4		
Q54	A-4		
Q55	A-2		
Q56	A-2		
Q57	F-3		
Q58	F-2		
Q59	C-3		

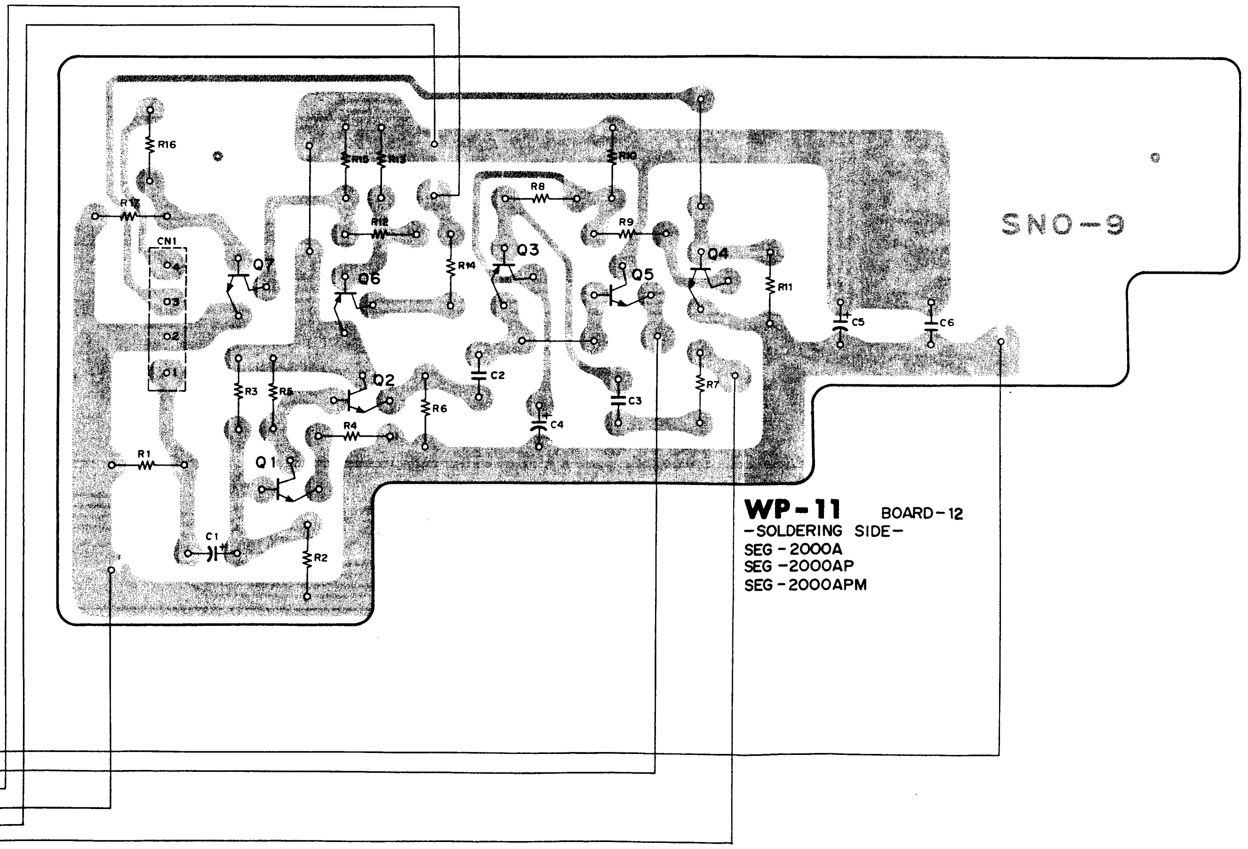
TC4051BP (TOSHIBA)
C-MOS 8-CHANNEL MULTIPLEXER/DEMULTIPLEXER
— TOP VIEW —


S4 IN/OUT 1
S6 IN/OUT 2
SC OUT/IN 3
S7 IN/OUT 4
S5 IN/OUT 5
EN (ENABLE) IN 6
7 Vss
8 GND
VDD 16 (+3 to 18V)
15 S2 IN/OUT
14 S1 IN/OUT
13 S0 IN/OUT
12 S3 IN/OUT
11 A (BINARY CONTROL) IN
10 B IN
9 C IN
13 S0
14 S1
15 S2
12 S3
1 S4
5 S5
2 S6
4 S7
6 EN
SC 3
OPEN
A B C VEE
11 10 9 7

EN	C	B	A	"ON" CHANNEL
0	0	0	0	0
0	0	0	1	1
0	0	1	0	2
0	0	1	1	3
0	1	0	0	4
0	1	0	1	5
0	1	1	0	6
0	1	1	1	7
1	X	X	X	OPEN

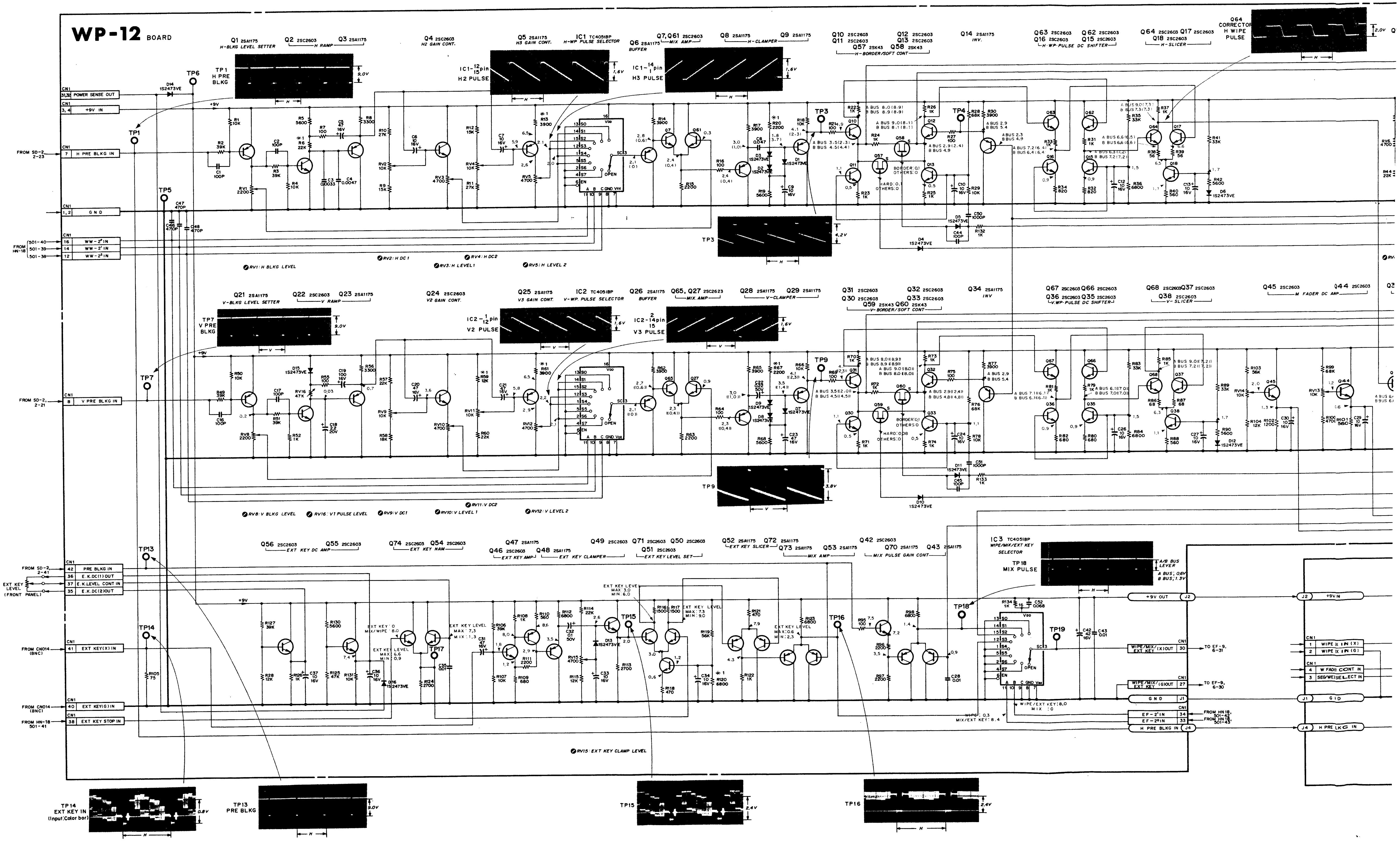
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

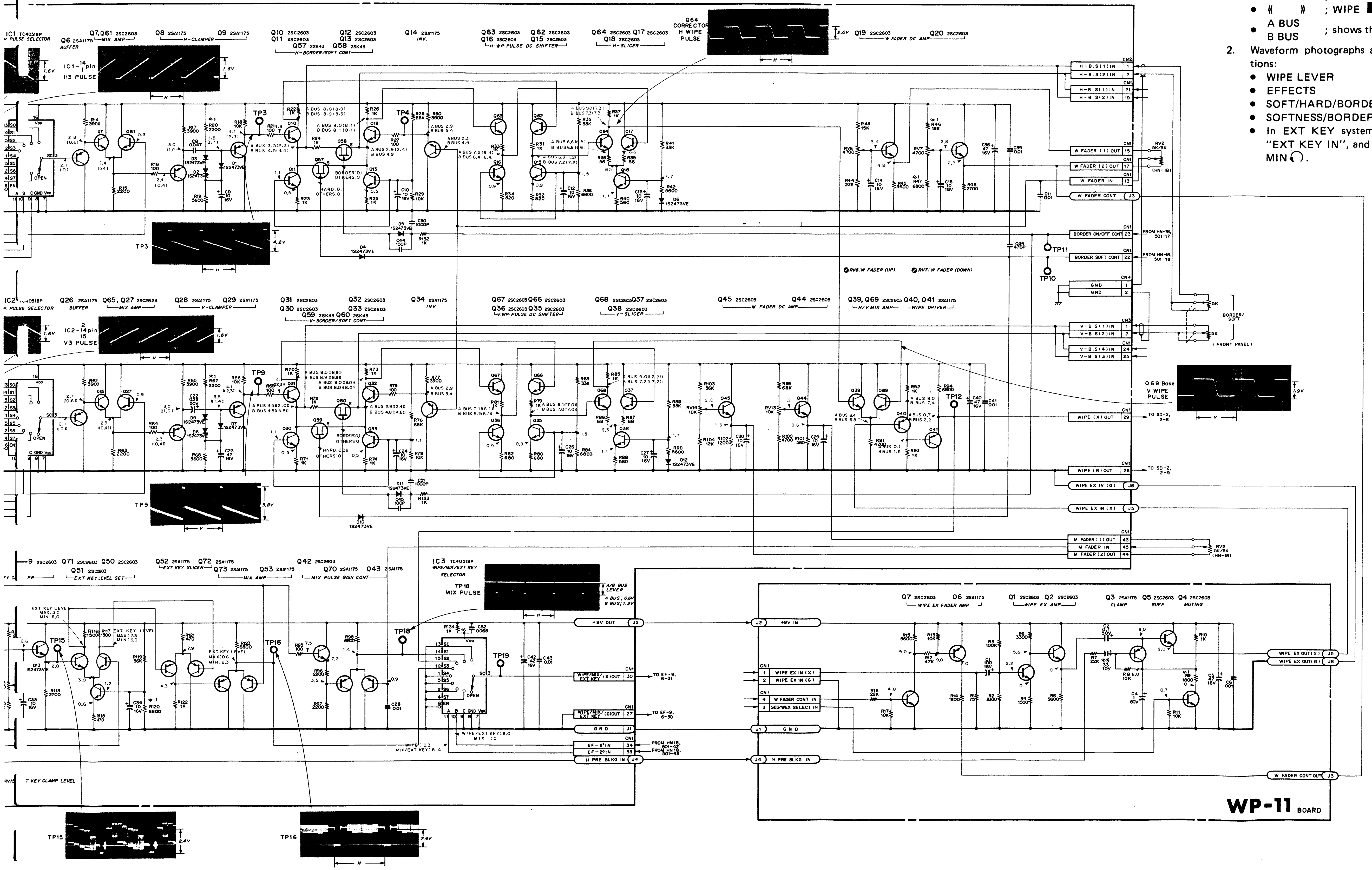
Serial No.		
J	:	10281 and higher
U/C	:	10801 and higher
AEP	:	11471 and higher
UK	:	10121 and higher
BRZ	:	10026 and higher


SNO-9
CN1
Q1
Q2
Q3
Q4
Q5
Q6
Q7

WP-11 BOARD-12
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

WP-11, WP-12 BOARD (WIPE SYSTEM)


WP-12 BOARD
Q1 2SA1175 H-BLKG LEVEL SETTER
Q2 2SC2603 H RAMP
Q3 2SA1175
Q4 2SC2603 H2 GAIN CONT.
Q5 2SA1175 H3 GAIN CONT.
IC1 TC4051BP H-WP PULSE SELECTOR
Q6 2SA1175 BUFFER
Q7, Q61 2SC2603 MIX AMP
Q8 2SA1175 H-CLAMPER
Q9 2SA1175
Q10 2SC2603
Q11 2SC2603
Q57 2SK43 Q58 2SK43 H-BORDER/SOFT CONT
Q12 2SC2603
Q13 2SC2603
Q14 2SA1175 INV.
Q63 2SC2603 Q62 2SC2603
Q16 2SC2603 Q15 2SC2603 H-WP-PULSE DC SHIFTER
Q64 2SC2603 Q17 2SC2603
Q18 2SC2603 H-SLICER
Q64 CORRECTOR H WIPE PULSE
TP1 H PRE BLKG
IC1-12/15pin H2 PULSE
IC1-14pin H3 PULSE
TP3
TP4
TP5
TP6
FROM SD-2, 2-23
H PRE BLKG IN
POWER SENSE OUT
+9V IN
GND
FROM HN-18
WW-2⁰ IN
WW-2¹ IN
WW-2² IN
RV1: H BLKG LEVEL
RV2: H DC1
RV3: H LEVEL1
RV4: H DC2
RV5: H LEVEL 2
Q21 2SA1175 V-BLKG LEVEL SETTER
Q22 2SC2603 V RAMP
Q23 2SA1175
Q24 2SC2603 V2 GAIN CONT.
Q25 2SA1175 V3 GAIN CONT.
IC2 TC4051BP V-WP PULSE SELECTOR
Q26 2SA1175 BUFFER
Q65, Q27 2SC2623 MIX AMP
Q28 2SA1175 V-CLAMPER
Q29 2SA1175
Q31 2SC2603
Q30 2SC2603
Q59 2SK43 Q60 2SK43 V-BORDER/SOFT CONT
Q32 2SC2603
Q33 2SC2603
Q34 2SA1175 INV
Q67 2SC2603 Q66 2SC2603
Q36 2SC2603 Q35 2SC2603 V-WP-PULSE DC SHIFTER
Q68 2SC2603 Q37 2SC2603
Q38 2SC2603 V-SLICER
Q45 2SC2603 M FADER DC AMP
Q44 2SC2603
TP7 V PRE BLKG
IC2-1/12pin V2 PULSE
IC2-14pin V3 PULSE
TP9
FROM SD-2, 2-21
V PRE BLKG IN
RV8: V BLKG LEVEL
RV16: V1 PULSE LEVEL
RV9: V DC1
RV10: V LEVEL 1
RV11: V DC2
RV12: V LEVEL 2
Q56 2SC2603 EXT KEY DC AMP
Q55 2SC2603
Q74 2SC2603 Q54 2SC2603 EXT KEY NAM
Q47 2SA1175
Q46 2SC2603 EXT KEY AMP
Q48 2SA1175 EXT KEY CLAMPER
Q49 2SC2603 Q71 2SC2603 Q50 2SC2603
Q51 2SC2603 EXT KEY LEVEL SET
Q52 2SA1175 Q72 2SA1175 EXT KEY SLICER
Q73 2SA1175 Q53 2SA1175 MIX AMP
Q42 2SC2603
Q70 2SA1175 Q43 2SA1175 MIX PULSE GAIN CONT
IC3 TC4051BP WIPE/MIX/EXT KEY SELECTOR
TP18 MIX PULSE
A/B BUS LEVER
A BUS; 0V
B BUS; 1.3V
TP13
TP14
TP15
TP16
TP17
TP19
FROM SD-2, 2-41
PRE BLKG IN
E.K.DC(1) OUT
E.K.LEVEL CONT IN
E.K.DC(2) OUT
EXT KEY LEVEL (FRONT PANEL)
FROM CN014 (BNC)
EXT KEY(X) IN
EXT KEY(G) IN
FROM HN-18 501-41
EXT KEY STOP IN
+9V OUT
WIPE/MIX/EXT KEY (X) OUT
WIPE/MIX/EXT KEY (G) OUT
TO EF-9, 6-31
TO EF-9, 6-30
GND
EF-2¹ IN
EF-2⁰ IN
H PRE BLKG IN
FROM HN-18, 501-42
FROM HN-18, 501-43
WIPE: 0.3
MIX/EXT KEY: 8.4
WIPE/EXT KEY: 8.0
MIX: 0
RV15: EXT KEY CLAMP LEVEL
+9V IN
WIPE (X) IN (X)
WIPE (X) IN (G)
W FADE CONT IN
SEG/WE SELECT IN
GND
H PRE BLKG IN
TP14 EXT KEY IN (Input: Color bar)
TP13 PRE BLKG
9.0V
2.4V
0.8V
1.6V
4.2V
3.8V
2.0V


IC1 TC4051BP
H PULSE SELECTOR
Q6 2SA1175 BUFFER
Q7,Q61 2SC2603 MIX AMP
Q8 2SA1175 H-CLAMPER
Q9 2SA1175
Q10 2SC2603
Q11 2SC2603
Q12 2SC2603
Q13 2SC2603
Q57 2SK43 Q58 2SK43
H-BORDER/SOFT CONT
Q14 2SA1175 INV.
Q63 2SC2603 Q62 2SC2603
Q16 2SC2603 Q15 2SC2603
H-WP-PULSE DC SHIFTER
Q64 2SC2603 Q17 2SC2603
Q18 2SC2603
H-SLICER
Q64 CORRECTOR H WIPE PULSE
2.0V
Q19 2SC2603 Q20 2SC2603
W FADER DC AMP
IC1-14pin H3 PULSE
1.6V
TP3
4.2V
TP4
H-B.S(1)IN
H-B.S(2)IN
H-B.S(1)IN
H-B.S(2)IN
W FADER (1) OUT
W FADER (2) OUT
W FADER IN
W FADER CONT
BORDER ON/OFF CONT
BORDER SOFT CONT
FROM HN-18, 501-17
FROM HN-18, 501-18
TP11
TP10
RV6: W FADER (UP)
RV7: W FADER (DOWN)
GND
GND
RV2 5K/5K (HN-18)
BORDER/SOFT
5K
5K
(FRONT PANEL)
IC2 TC4051BP
V PULSE SELECTOR
Q26 2SA1175 BUFFER
Q65, Q27 2SC2623 MIX AMP
Q28 2SA1175 V-CLAMPER
Q29 2SA1175
Q31 2SC2603
Q30 2SC2603
Q32 2SC2603
Q33 2SC2603
Q59 2SK43 Q60 2SK43
V-BORDER/SOFT CONT
Q34 2SA1175 INV
Q67 2SC2603 Q66 2SC2603
Q36 2SC2603 Q35 2SC2603
V-WP-PULSE DC SHIFTER
Q68 2SC2603 Q37 2SC2603
Q38 2SC2603
V-SLICER
Q45 2SC2603 Q44 2SC2603
M FADER DC AMP
Q39, Q69 2SC2603 Q40, Q41 2SA1175
H/V MIX AMP WIPE DRIVER
IC2-14pin V3 PULSE
1.6V
TP9
3.8V
TP12
V-B.S(1)IN
V-B.S(2)IN
V-B.S(4)IN
V-B.S(3)IN
Q69 Base V WIPE PULSE
1.9V
WIPE (X) OUT
TO SD-2, 2-8
WIPE (G) OUT
TO SD-2, 2-9
WIPE EX IN (G)
WIPE EX IN (X)
M FADER (1) OUT
M FADER IN
M FADER (2) OUT
RV2 5K/5K (HN-18)
Q49 2SC2603 Q71 2SC2603 Q50 2SC2603
Q51 2SC2603
EXT KEY LEVEL SET
Q52 2SA1175 Q72 2SA1175
EXT KEY SLICER
Q73 2SA1175
Q53 2SA1175
MIX AMP
Q42 2SC2603
Q70 2SA1175 Q43 2SA1175
MIX PULSE GAIN CONT
IC3 TC4051BP
WIPE/MIX/EXT KEY SELECTOR
TP18 MIX PULSE
A/B BUS LEVER
A BUS; 0.6V
B BUS; 1.3V
EXT KEY LEVEL MAX: 3.0 MIN: 6.0
TP15
TP16
TP18
TP19
+9V OUT
WIPE/MIX/EXT KEY (X) OUT
TO EF-9, 6-31
WIPE/MIX/EXT KEY (G) OUT
TO EF-9, 6-30
GND
EF-2'IN
EF-2"IN
H PRE BLKG IN
FROM HN 18, 501-42
FROM HN 18, 501-43
WIPE: 0.3
MIX/EXT KEY: 8.4
WIPE/EXT KEY: 8.0
MIX: 0
EXT KEY CLAMP LEVEL
TP15
2.4V
TP16
2.4V
Q7 2SC2603 Q6 2SA1175
WIPE EX FADER AMP
Q1 2SC2603 Q2 2SC2603
WIPE EX AMP
Q3 2SA1175 CLAMP
Q5 2SC2603 BUFF
Q4 2SC2603 MUTING
+9V IN
WIPE EX IN (X)
WIPE EX IN (G)
W FADER CONT IN
SEQ/WEX SELECT IN
GND
H PRE BLKG IN
WIPE EX OUT (X)
WIPE EX OUT (G)
W FADER CONT OUT
WP-11 BOARD

NOTE:

1. All voltage are mesaured with a digital voltmeter (input impedance 10MΩ) and taken under the following conditions;
   - NO MARK ; WIPE "OTHERS" SELECT
   - (   ) ; WIPE ⬒
   - ((   )) ; WIPE ◧
   - A BUS / B BUS ; shows the position of the wipe lever.
2. Waveform photographs are taken under the following conditions:
   - WIPE LEVER ; CENTER
   - EFFECTS ; WIPE ◲
   - SOFT/HARD/BORDER ; BORDER
   - SOFTNESS/BORDER ; MAX ↻
   - In EXT KEY system, input color bar signal (1 Vp-p) to "EXT KEY IN", and turn "EXT KEY LEVEL" control to MIN↺.

(For WP-12 Board)
NOTE

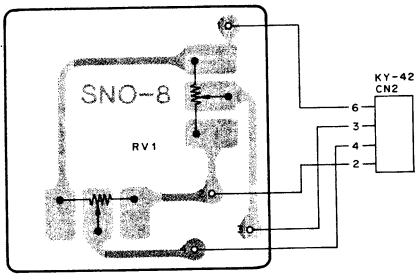
MARK	CHANGE INFORMATION	SERIAL NO.
※1	R13,R61 4300 → 3900 R47,R120 8200 → 6800 R46 22K → 18K	(J) 10411～ (U/C) 11121～ (AEP) 12421～ (UK) 10161～ (BRZ) 10046～
※2	R6 24K → 22K R20,67 2K → 2200 R59 13K → 12K	(J) 10441～ (U/C) 11261～ (AEP) 12821～ (UK) 10191～ (BRZ) 10046～

(For WP-11 Board)
NOTE

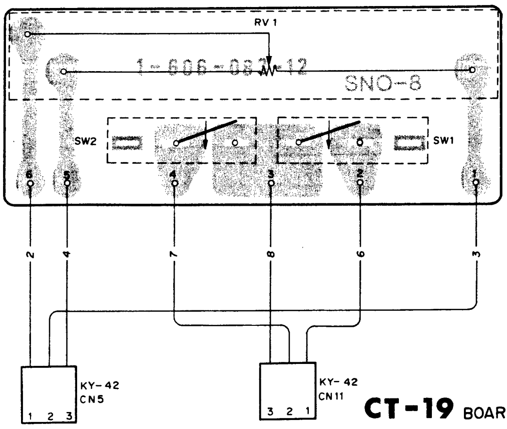
MARK	CHANGE INFORMATION	SERIAL NO.
※1	R9 2K → 1800	(J) 10441～ (U/C) 11261～ (AEP) 12821～ (UK) 10191～ (BRZ) 10046～

KEY BOARD FRAME CT-18, CT-19, JK-7, LP-12

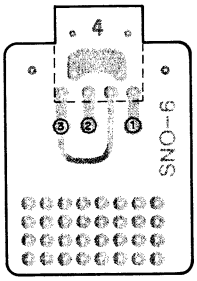
CT-18 BOARD
CT-19 BOARD
JK-7 BOARD
LP-12 BOARD


SNO-8
RV1
KY-42
CN2
6
3
4
2

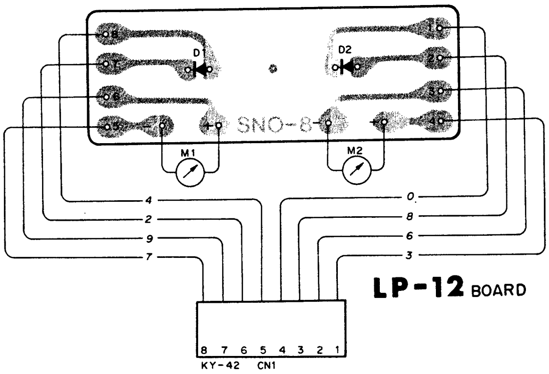
CT-18 BOARD


RV1
1-606-087-12
SNO-8
SW2
SW1
6
5
4
3
2
1
2
4
7
8
9
3
KY-42
CN5
1 2 3
KY-42
CN11
3 2 1

CT-19 BOARD

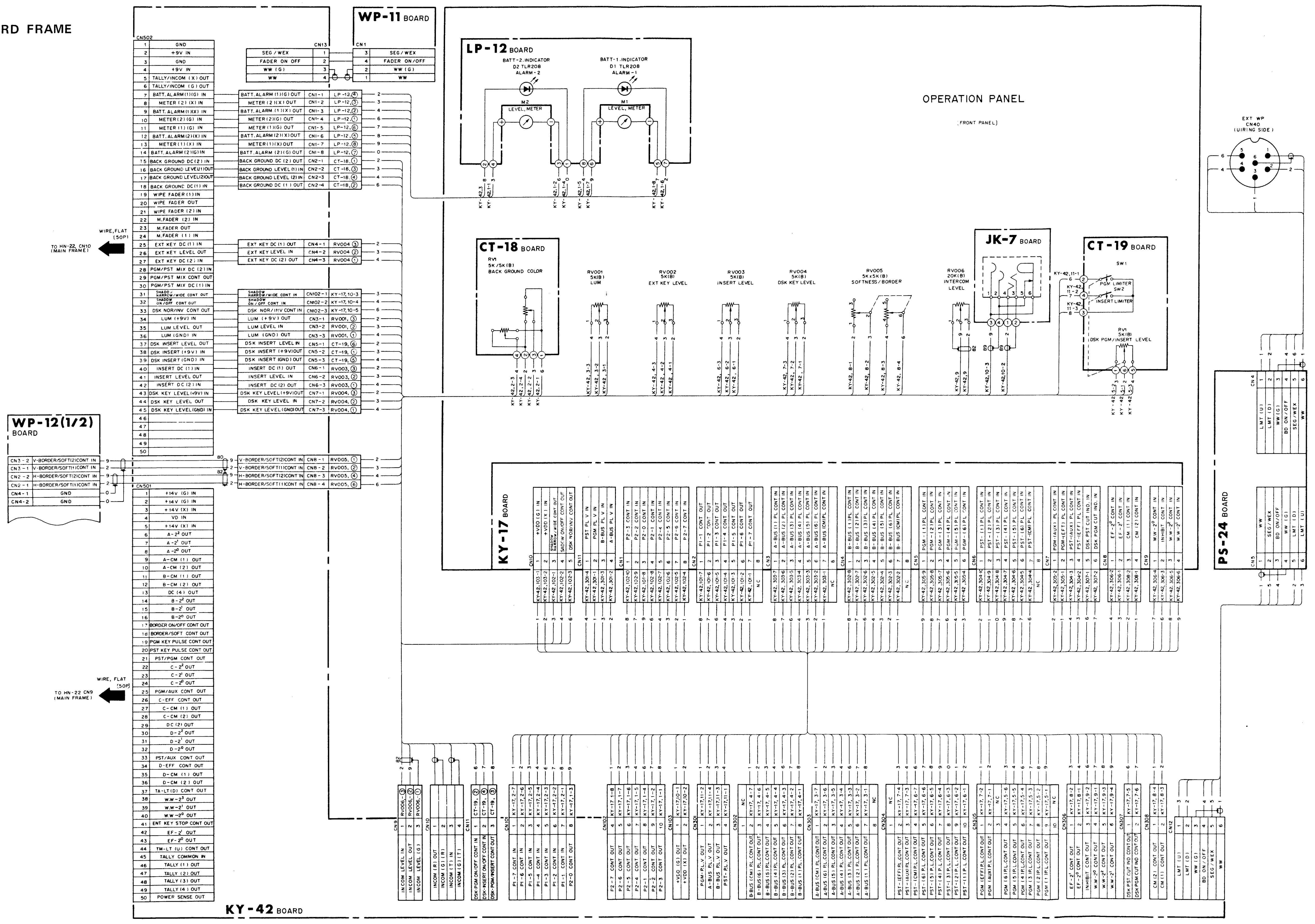


JK-7 BOARD-11
–SOLDERING SIDE–
SEG-2000A
SEG-2000AP
SEG-2000APM

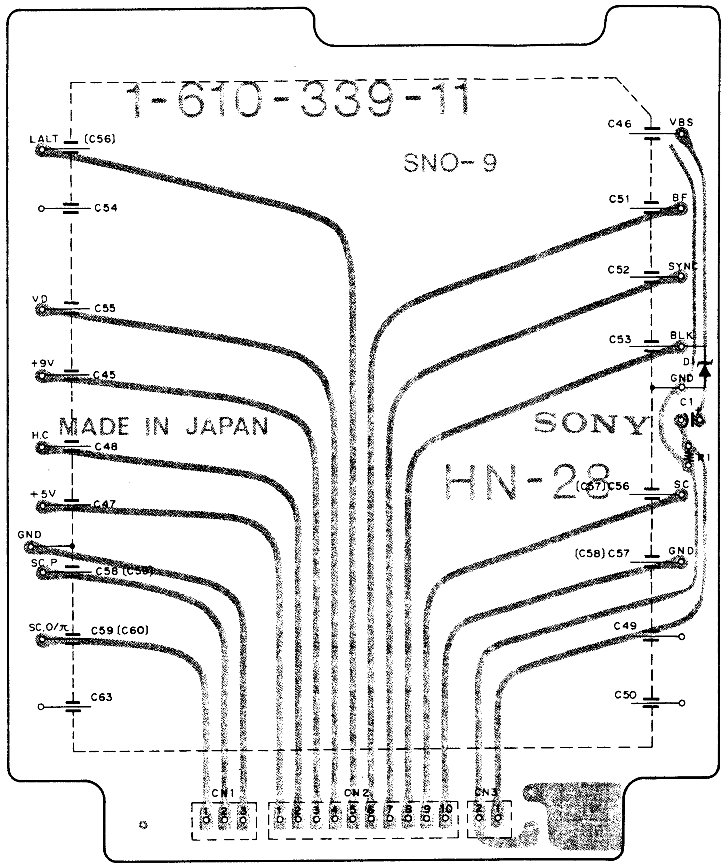

D
D2
SNO-8
M1
M2
4
2
9
7
0
8
6
3
8 7 6 5 4 3 2 1
KY-42 CN1

LP-12 BOARD

KEY BOARD FRAME

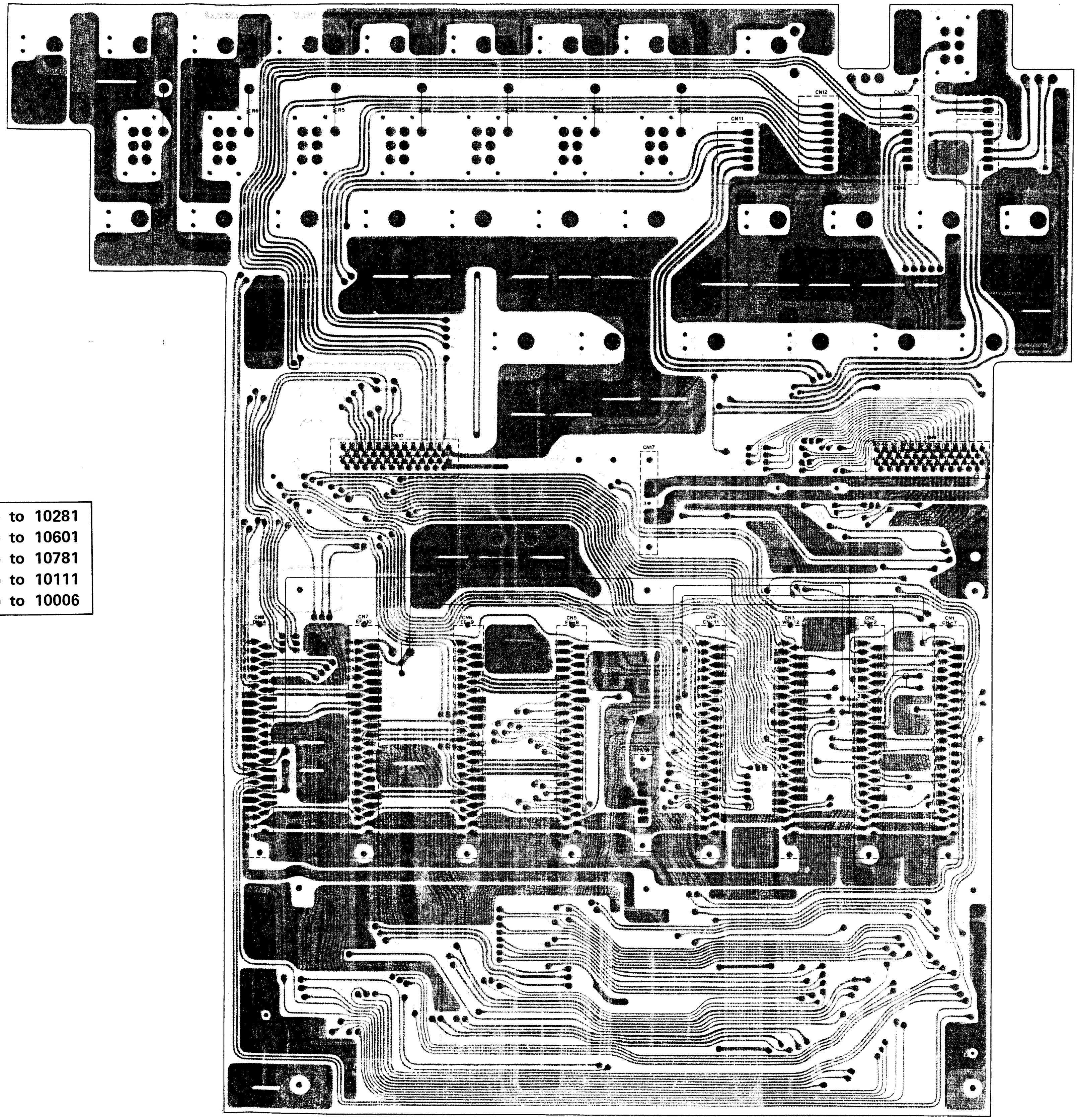

WP-11 BOARD
CN502
1 GND
2 +9V IN
3 GND
4 +9V IN
5 TALLY/INCOM (X) OUT
6 TALLY/INCOM (G) OUT
7 BATT. ALARM(1)(G) IN
8 METER (2) (X) IN
9 BATT. ALARM(1)(X) IN
10 METER(2)(G) IN
11 METER (1) (G) IN
12 BATT. ALARM(2)(X) IN
13 METER (1) (X) IN
14 BATT. ALARM (2)(G) IN
15 BACK GROUND DC(2) IN
16 BACK GROUND LEVEL(1)OUT
17 BACK GROUND LEVEL(2)OUT
18 BACK GROUND DC(1) IN
19 WIPE FADER (1) IN
20 WIPE FADER OUT
21 WIPE FADER (2) IN
22 M.FADER (2) IN
23 M.FADER OUT
24 M.FADER (1) IN
25 EXT KEY DC (1) IN
26 EXT KEY LEVEL OUT
27 EXT KEY DC (2) IN
28 PGM/PST MIX DC (2) IN
29 PGM/PST MIX CONT OUT
30 PGM/PST MIX DC (1) IN
31 SHADOW NARROW/WIDE CONT OUT
32 SHADOW ON/OFF CONT OUT
33 DSK NOR/INV CONT OUT
34 LUM (+9V) IN
35 LUM LEVEL OUT
36 LUM (GND) IN
37 DSK INSERT LEVEL OUT
38 DSK INSERT (+9V) IN
39 DSK INSERT (GND) IN
40 INSERT DC (1) IN
41 INSERT LEVEL OUT
42 INSERT DC (2) IN
43 DSK KEY LEVEL(+9V) IN
44 DSK KEY LEVEL OUT
45 DSK KEY LEVEL(GND) IN
46
47
48
49
50
CN13
SEG / WEX 1
FADER ON OFF 2
WW (G) 3
WW 4
CN1
3 SEG/WEX
4 FADER ON/OFF
2 WW (G)
1 WW
BATT. ALARM (1)(G) OUT CN1-1 LP-12,④ 2
METER (2)(X) OUT CN1-2 LP-12,③ 3
BATT. ALARM (1)(X) OUT CN1-3 LP-12,② 4
METER (2)(G) OUT CN1-4 LP-12,① 6
METER (1)(G) OUT CN1-5 LP-12,⑥ 7
BATT. ALARM (2)(X) OUT CN1-6 LP-12,⑤ 8
METER (1)(X) OUT CN1-7 LP-12,⑧ 9
BATT. ALARM (2)(G) OUT CN1-8 LP-12,⑦ 0
BACK GROUND DC (2) OUT CN2-1 CT-18,① 2
BACK GROUND LEVEL (1) IN CN2-2 CT-18,③ 3
BACK GROUND LEVEL (2) IN CN2-3 CT-18,④ 4
BACK GROUND DC (1) OUT CN2-4 CT-18,② 6
EXT KEY DC (1) OUT CN4-1 RV004 ③ 2
EXT KEY LEVEL IN CN4-2 RV004 ② 3
EXT KEY DC (2) OUT CN4-3 RV004 ① 4
SHADOW NARROW/WIDE CONT IN CN102-1 KY-17, 10-3 3
SHADOW ON/OFF CONT IN CN102-2 KY-17, 10-4 4
DSK NOR/INV CONT IN CN102-3 KY-17, 10-5 6
LUM (+9V) OUT CN3-1 RV001, ③ 2
LUM LEVEL IN CN3-2 RV001, ② 3
LUM (GND) OUT CN3-3 RV001, ① 4
DSK INSERT LEVEL IN CN5-1 CT-19, ⑥ 2
DSK INSERT (+9V) OUT CN5-2 CT-19, ① 3
DSK INSERT (GND) OUT CN5-3 CT-19, ⑤ 4
INSERT DC (1) OUT CN6-1 RV003, ③ 2
INSERT LEVEL IN CN6-2 RV003, ② 3
INSERT DC (2) OUT CN6-3 RV003, ① 4
DSK KEY LEVEL(+9V) OUT CN7-1 RV004, ③ 2
DSK KEY LEVEL IN CN7-2 RV004, ② 3
DSK KEY LEVEL(GND) OUT CN7-3 RV004, ① 4
V-BORDER/SOFT(2)CONT IN CN8-1 RV005, ① 2
V-BORDER/SOFT(1)CONT IN CN8-2 RV005, ② 3
H-BORDER/SOFT(2)CONT IN CN8-3 RV005, ④ 4
H-BORDER/SOFT(1)CONT IN CN8-4 RV005, ⑥ 6
80
82
WIRE, FLAT (50P)
TO HN-22, CN10 (MAIN FRAME)
WP-12(1/2) BOARD
CN3-2 V-BORDER/SOFT(2)CONT IN 9
CN3-1 V-BORDER/SOFT(1)CONT IN 2
CN2-2 H-BORDER/SOFT(2)CONT IN 9
CN2-1 H-BORDER/SOFT(1)CONT IN 2
CN4-1 GND 0
CN4-2 GND 0
CN501
1 +14V (G) IN
2 +14V (G) IN
3 +14V (X) IN
4 VD IN
5 +14V (X) IN
6 A-2² OUT
7 A-2¹ OUT
8 A-2⁰ OUT
9 A-CM (1) OUT
10 A-CM (2) OUT
11 B-CM (1) OUT
12 B-CM (2) OUT
13 DC (4) OUT
14 B-2² OUT
15 B-2¹ OUT
16 B-2⁰ OUT
17 BORDER ON/OFF CONT OUT
18 BORDER/SOFT CONT OUT
19 PGM KEY PULSE CONT OUT
20 PST KEY PULSE CONT OUT
21 PST/PGM CONT OUT
22 C-2² OUT
23 C-2¹ OUT
24 C-2⁰ OUT
25 PGM/AUX CONT OUT
26 C-EFF CONT OUT
27 C-CM (1) OUT
28 C-CM (2) OUT
29 DC (2) OUT
30 D-2² OUT
31 D-2¹ OUT
32 D-2⁰ OUT
33 PST/AUX CONT OUT
34 D-EFF CONT OUT
35 D-CM (1) OUT
36 D-CM (2) OUT
37 TA-LT(D) CONT OUT
38 W.W-2³ OUT
39 W.W-2¹ OUT
40 W.W-2⁰ OUT
41 ENT KEY STOP CONT OUT
42 EF-2¹ OUT
43 EF-2⁰ OUT
44 TM-LT (U) CONT OUT
45 TALLY COMMON IN
46 TALLY (1) OUT
47 TALLY (2) OUT
48 TALLY (3) OUT
49 TALLY (4) OUT
50 POWER SENSE OUT
WIRE, FLAT (50P)
TO HN-22 CN9 (MAIN FRAME)
KY-42 BOARD
LP-12 BOARD
BATT-2 INDICATOR D2 TLR208 ALARM-2
BATT-1 INDICATOR D1 TLR208 ALARM-1
M2 LEVEL METER
M1 LEVEL METER
OPERATION PANEL
(FRONT PANEL)
CT-18 BOARD
RV1 5K/5K(B) BACK GROUND COLOR
RV001 5K(B) LUM
RV002 5K(B) EXT KEY LEVEL
RV003 5K(B) INSERT LEVEL
RV004 5K(B) DSK KEY LEVEL
RV005 5K×5K(B) SOFTNESS/BORDER
RV006 20K(B) INTERCOM LEVEL
JK-7 BOARD
CT-19 BOARD
SW1
PGM LIMITER
SW2
INSERT LIMITER
RV1 5K(B) DSK PGM/INSERT LEVEL
EXT WP CN40 (WIRING SIDE)
KY-17 BOARD
PS-24 BOARD
CN4
LMT (U)
LMT (G)
WW (G)
BD ON/OFF
SEG/WEX
WW
CN5
CN12
CN9
INCOM LEVEL IN
INCOM LEVEL OUT
INCOM LEVEL (G)
CN10
INCOM (R) OUT
INCOM (G) IN
INCOM (T) IN
INCOM (G) (T)

HN-22 BOARD
HN-28 BOARD


1-610-339-11
SNO-9
MADE IN JAPAN
SONY
HN-28
LALT
(C56)
C54
VD
C55
+9V
C45
H.C
C48
+5V
C47
GND
SC.P
C58 (C59)
SC.O/π
C59 (C60)
C63
C46
VBS
C51
BF
C52
SYNC
C53
BLK
D1
GND
C1
R1
(C57) C56
SC
(C58) C57
GND
C49
C50
CN1
CN2
CN3
1
2
3
4
5
6
7
8
9
10

HN-28 BOARD-11
-SOLDERING SIDE-
SEG-2000A

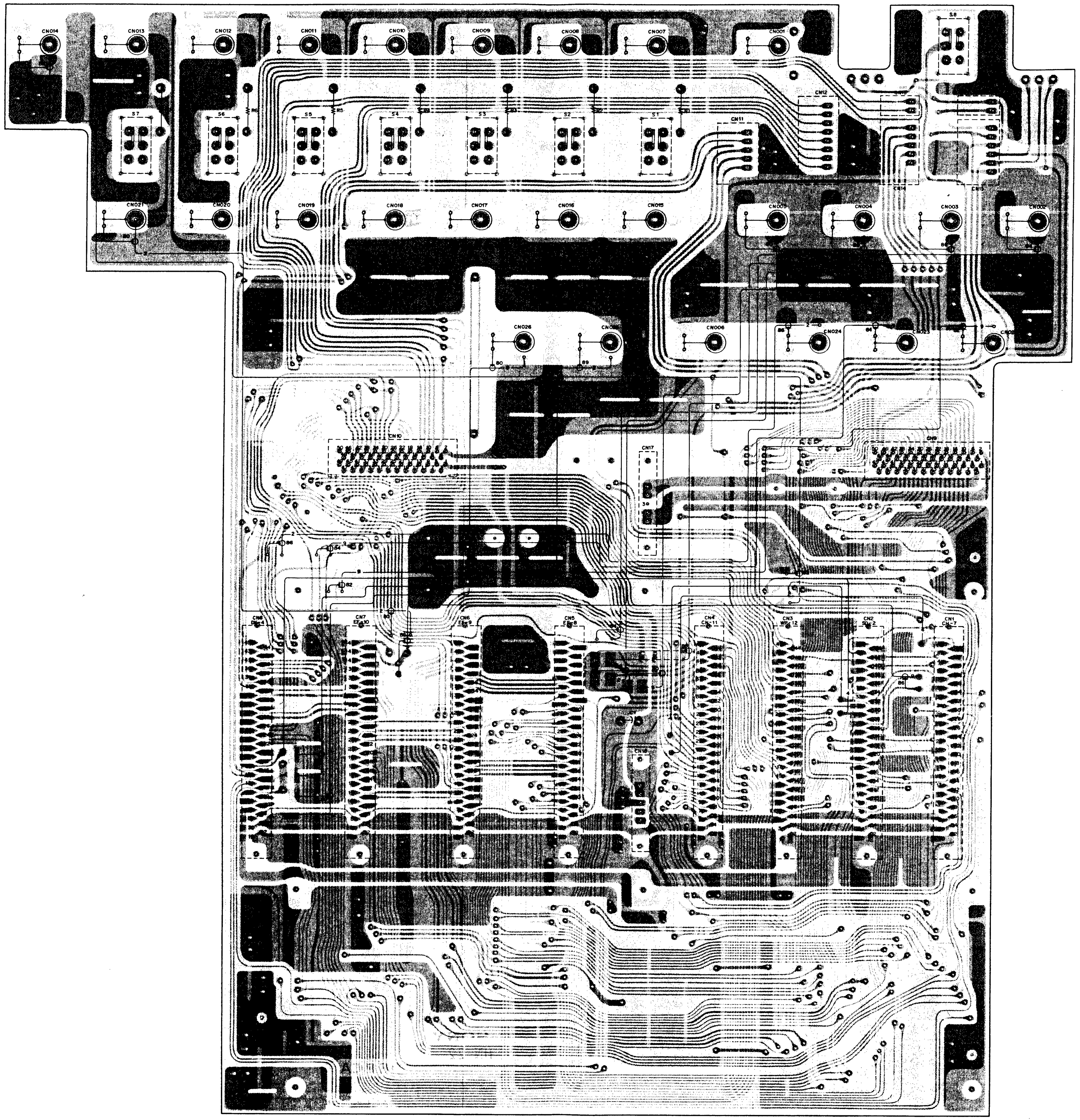
Serial No.		
J	: Up to	10281
U/C	: Up to	10601
AEP	: Up to	10781
UK	: Up to	10111
BRZ	: Up to	10006


CN8
DM-4
CN7
EF-10
CN6
EF-9
CN5
EF-8
CN4
CN-11
CN3
WP-12
CN2
SD-2
CN1
CH-7

HN-22 BOARD-11,12
-SOLDERING SIDE-
SEG-2000A
SEG-2000AP
SEG-2000APM

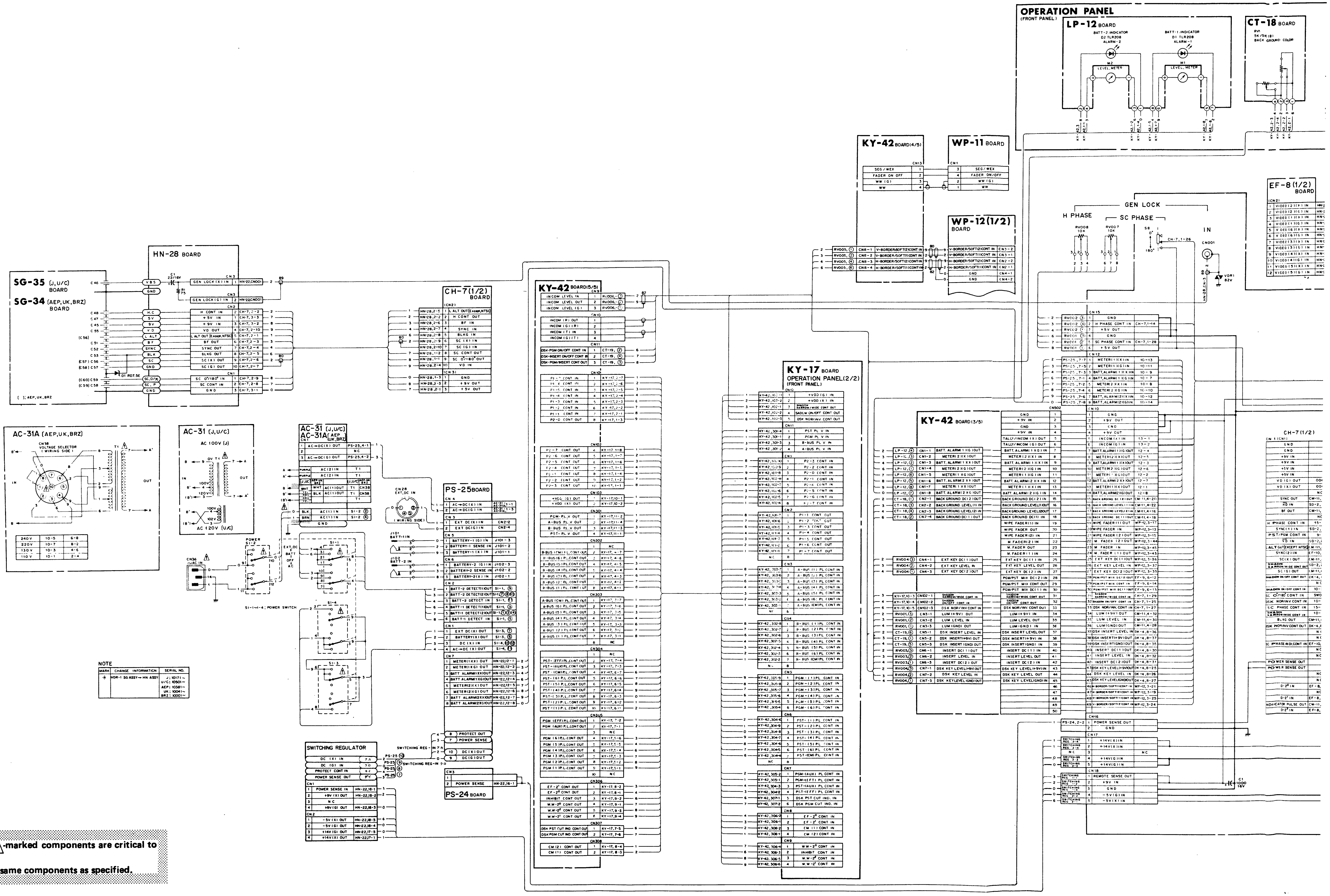
HN-22 BOARD

Serial No.	J	: 10281 and higher
	U/C	: 10601 and higher
	AEP	: 10781 and higher
	UK	: 10111 and higher
	BRZ	: 10006 and higher


CN014
CN013
CN012
CN011
CN010
CN009
CN008
CN007
CN001
S8
S7
S6
S5
S4
S3
S2
S1
CN021
CN020
CN019
CN018
CN017
CN016
CN015
CN005
CN004
CN003
CN026
CN006
CN024
CN10
CN17
CN9
CN8
CN7
CN6
CN5
CN4
CN3
CN2
CN1

HN-22 BOARD-13
- SOLDERING SIDE -
SEG - 2000A
SEG - 2000AP
SEG - 2000APM

MAIN FRAME


OPERATION PANEL (FRONT PANEL)
LP-12 BOARD
CT-18 BOARD
KY-42 BOARD(4/5)
WP-11 BOARD
WP-12(1/2) BOARD
EF-8(1/2) BOARD
GEN LOCK
H PHASE
SC PHASE
IN
HN-28 BOARD
SG-35 (J,U/C) BOARD
SG-34 (AEP,UK,BRZ) BOARD
CH-7(1/2) BOARD
KY-42 BOARD(5/5)
KY-17 BOARD OPERATION PANEL(2/2) (FRONT PANEL)
KY-42 BOARD(3/5)
CH-7(1/2)
AC-31A (AEP,UK,BRZ)
AC-31 (J,U/C)
AC-31 (J,U/C) AC-31A (AEP,UK,BRZ)
PS-25 BOARD
PS-24 BOARD
SWITCHING REGULATOR
CN36 AC IN
CN28 EXT DC IN
POWER S1-2
S1-1~1-4; POWER SWITCH
240V
220V
130V
110V
AC 100V (J)
AC 120V (U/C)

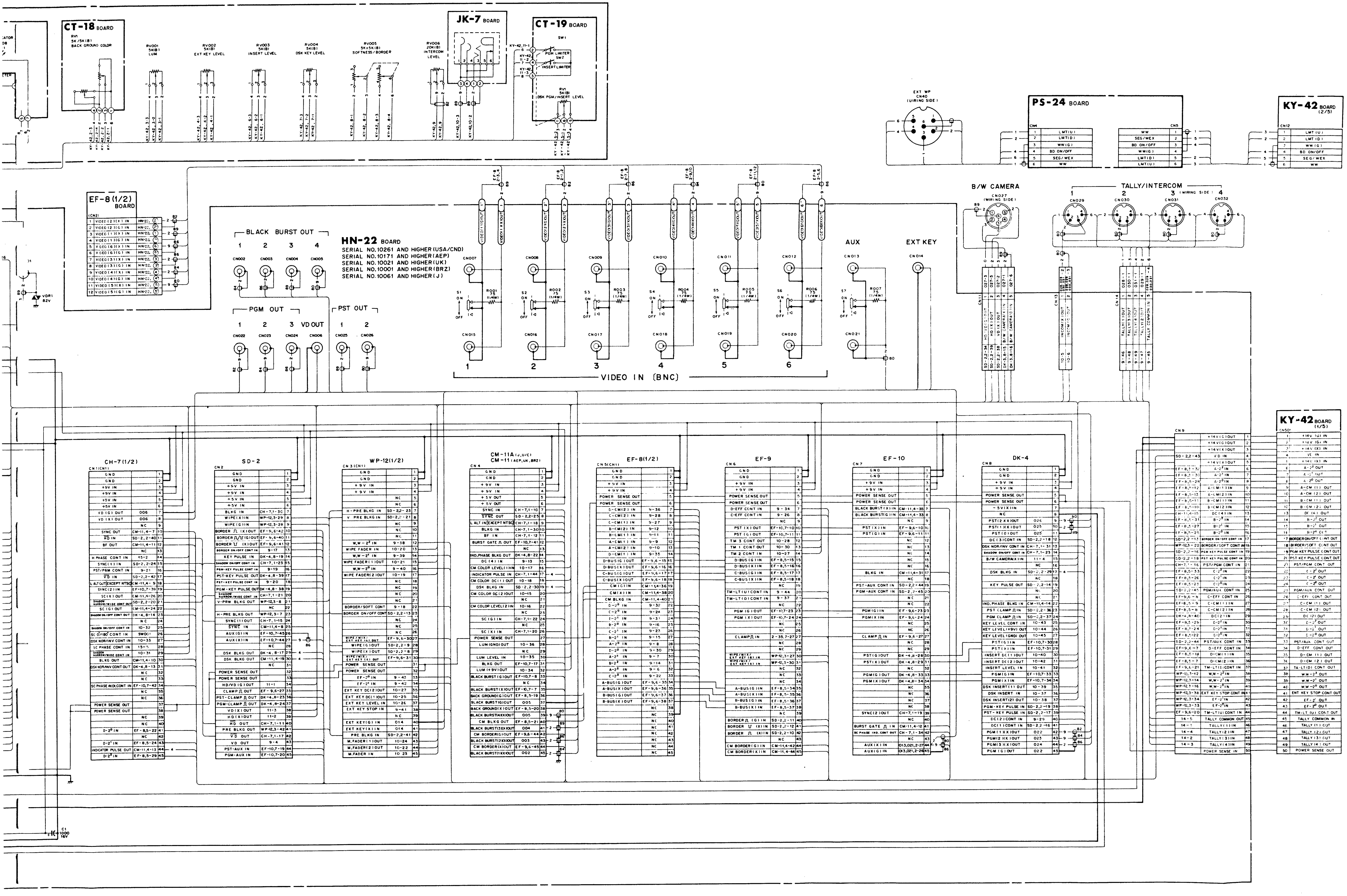
NOTE

MARK	CHANGE INFORMATION	SERIAL NO.
*	VDR-1 SG ASSY→HN ASSY	J ; 10171~ U/C ; 10501~ AEP ; 10381~ UK ; 10041~ BRZ ; 10001~

NOTE:

The shaded and ⚠-marked components are critical to safety.
Replace only with same components as specified.

FRAME FRAME



CT-18 BOARD
JK-7 BOARD
CT-19 BOARD
EF-8 (1/2) BOARD
HN-22 BOARD
SERIAL NO. 10261 AND HIGHER (USA/CND)
SERIAL NO. 10171 AND HIGHER (AEP)
SERIAL NO. 10021 AND HIGHER (UK)
SERIAL NO. 10001 AND HIGHER (BRZ)
SERIAL NO. 10061 AND HIGHER (J)
BLACK BURST OUT
PGM OUT
VD OUT
PST OUT
VIDEO IN (BNC)
AUX
EXT KEY
EXT WP
PS-24 BOARD
KY-42 BOARD (2/5)
B/W CAMERA
TALLY/INTERCOM
CH-7 (1/2)
SD-2
WP-12 (1/2)
CM-11A (J,U/C)
CM-11 (AEP,UK,BRZ)
EF-8 (1/2)
EF-9
EF-10
DK-4
KY-42 BOARD (1/5)

SECTION 12
SPARE PARTS AND JIG

12-1. PARTS INFORMATION

1. **Safety Related Component Warning**

   Components identified by shading on the schematic diagrams, exploded views and electrical spare parts list are critical to safe operation. Replace these components with Sony parts whose part numbers appear as shown in this manual or in service bulletins and service manual supplements published by Sony.

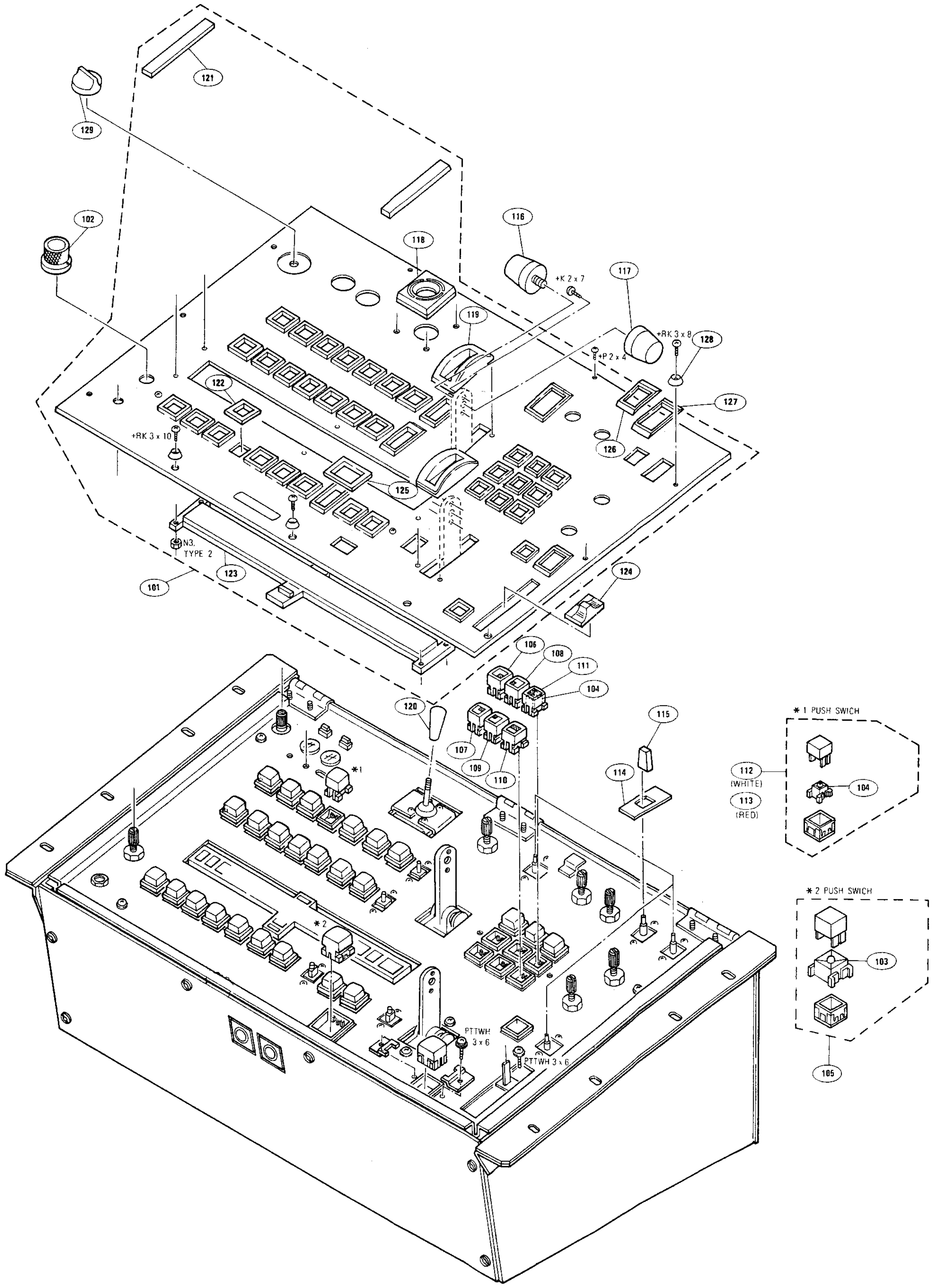
2. Replace Parts that are supplied from Sony Parts Center can sometimes have different shape and external appearance than what are actually used in equipment. This is due to **"accomodating the improved parts and/or engineering changes"** or **"standardization of genuine parts"**.

   - This manual's exploded views and electrical spare parts list are indicating the parts numbers of "the standardized genuine parts at present".
   - Regarding engineering parts changes in our engineering department, refer Sony service bulletins and service manual supplements.

3. **Printed Components in Bold-Face type** on the exploded views and electrical spare parts list are normally stocked for replacement purposes. The remaining parts are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

4. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

12-2. EXPLODED VIEW
Control Panel Block

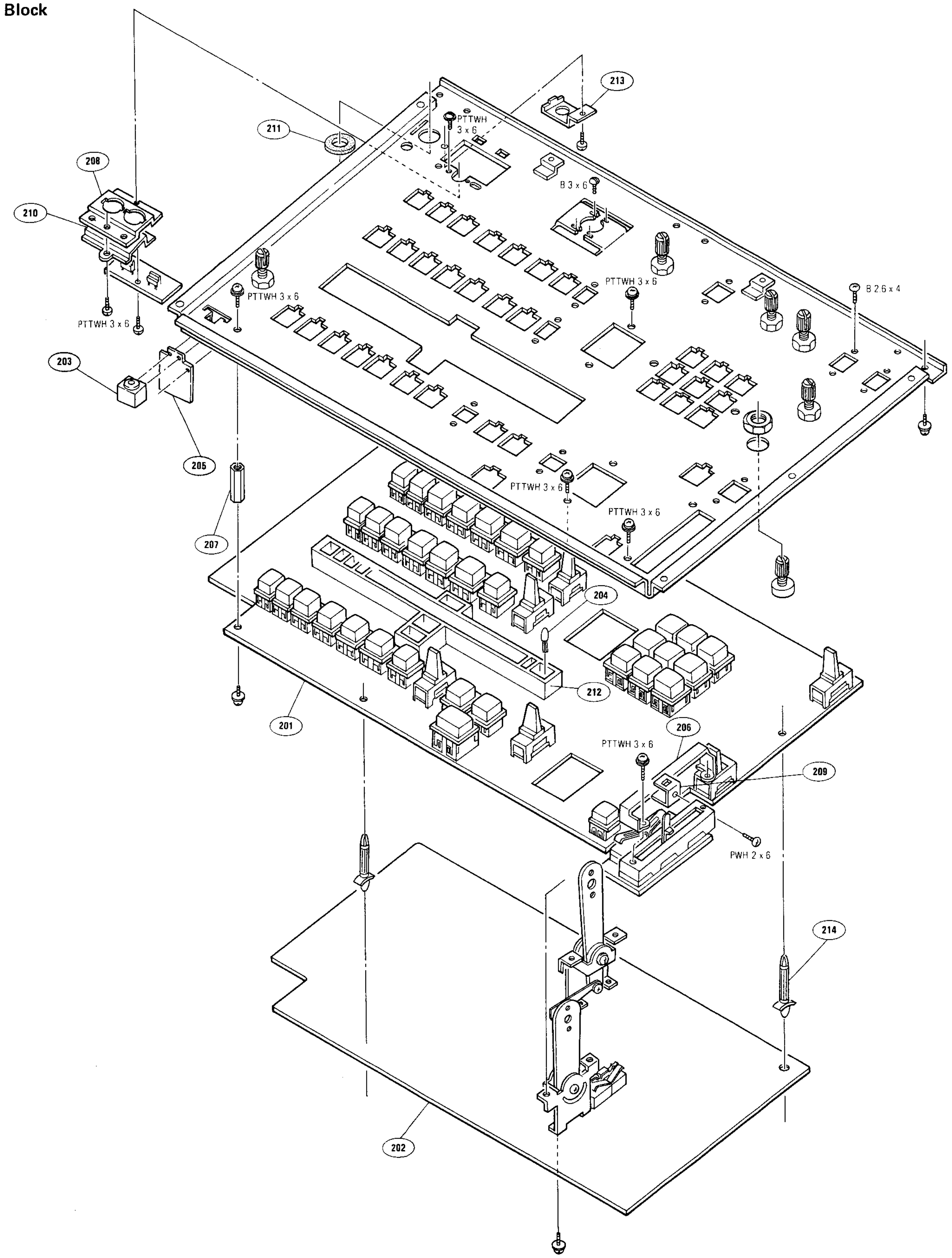

121
129
102
116
118
117
+K 2 x 7
119
+RK 3 x 8
128
+P 2 x 4
127
122
126
+RK 3 x 10
125
N3,
TYPE 2
123
124
101
106
108
111
104
120
115
107
109
110
114
*1
*2
✱1 PUSH SWICH
112
(WHITE)
113
(RED)
104
✱2 PUSH SWICH
103
105
PTTWH
3 x 6
PTTWH 3 x 6

No.	Parts No.	Description
101	A-7605-048-A	PANEL ASSY, CONTROL
102	**X-3651-342-0**	**KNOB ASSY, CONTROL**
103	**1-518-450-21**	**PILOT LAMP**
104	**1-518-480-00**	**PILOT LAMP**
105	**1-553-551-51**	**SWITCH, PUSH**
	3-706-481-12	**KEYTOP**
106	**1-553-939-11**	**SWITCH, PUSH**
	3-706-584-11	**KEYTOP**
107	**1-553-939-21**	**SWITCH, PUSH**
	3-706-584-01	**KEYTOP**
108	**1-553-939-31**	**SWITCH, PUSH**
	3-706-584-11	**KEYTOP**
109	**1-553-939-41**	**SWITCH, PUSH**
	3-706-584-01	**KEYTOP**
110	**1-553-939-91**	**SWITCH, PUSH**
	3-706-584-31	**KEYTOP**
111	**1-554-074-00**	**SWITCH, PUSH**
	3-706-584-21	**KEYTOP**
112	**1-553-939-71**	**SWITCH, PUSH**
	3-706-480-01	**KEYTOP (WHITH)**
113	**1-553-939-81**	**SWITCH, PUSH**
	3-706-480-12	**KEYTOP (RED)**
114	2-249-363-00	PLATE, LEVER SWITCH
115	**2-252-620-00**	**KNOB, LEVER SWITCH**
116	**2-254-705-00**	**KNOB, (6) LEVER**
117	**2-254-708-00**	**KNOB, (5) LEVER**
118	2-254-713-00	COVER, JOYSTICK
119	2-254-758-00	COVER, WIPE LEVER
120	**2-296-508-00**	**KNOB, JOYSTICK**
121	2-296-528-00	FRAME, ORNAMENTAL
122	2-296-534-00	ESCUTCHEON
123	2-296-535-00	PLATE, INDICATION
124	**3-536-814-00**	**KNOB, SLIDE CONTROL**
125	3-668-011-00	ESCUTCHEON (17), BUTTON
126	3-668-016-00	FRAME (SMALL), ORNAMENTAL
127	3-668-018-00	FRAME (MIDOLE), ORNAMENTAL
128	**3-703-224-00**	**WASHER (3 DIA), ORNAMENTAL**
129	**4-858-419-11**	**KNOB SELECTOR**

NOTE:

1. **The shaded and ⚠-marked components are critical to safety. Replace only with same component as specified.**
2. Parts printed in **Bold-Face** type are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

Control System Printed Circuit Boards Block

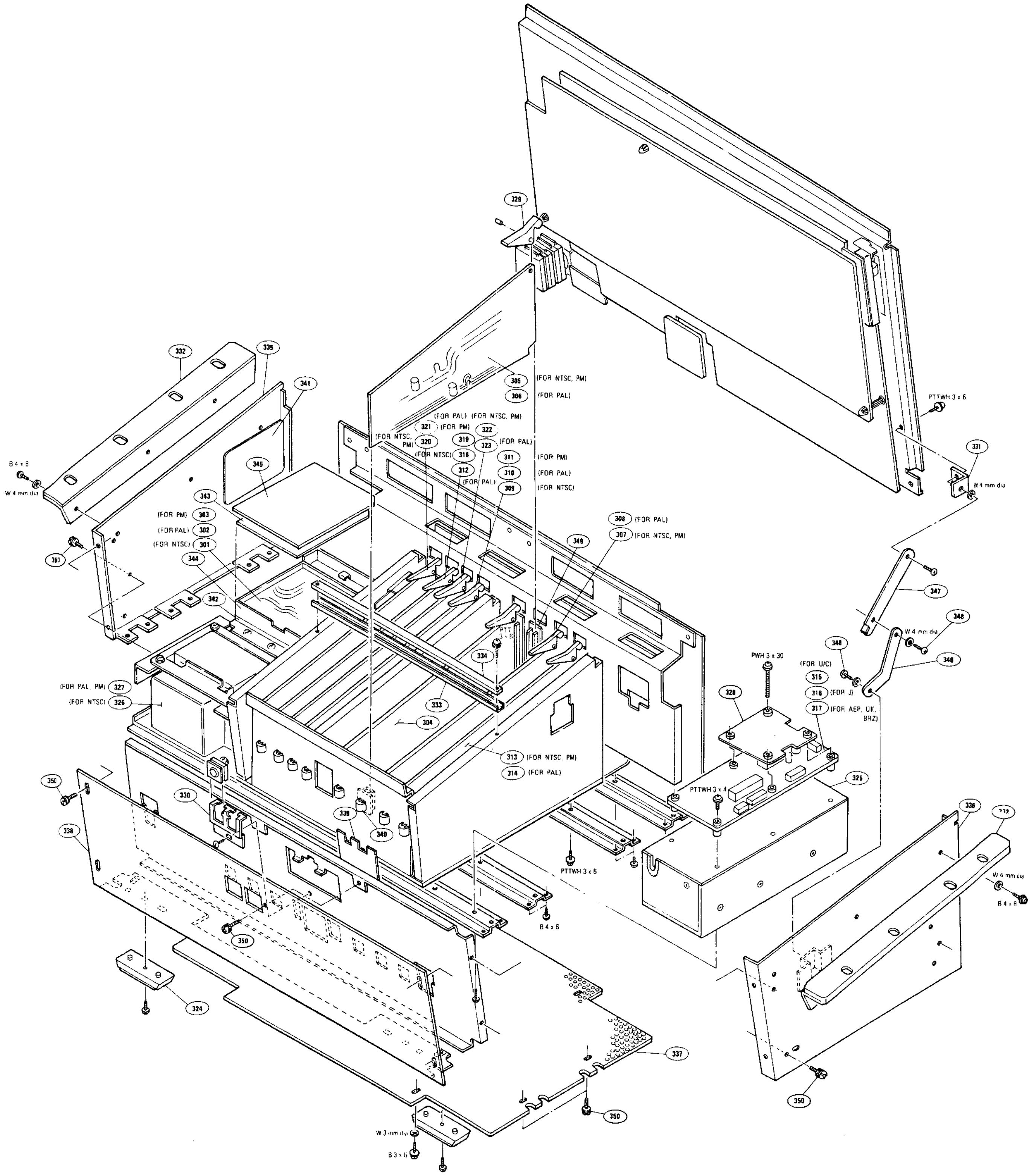

213
211
PTTWH 3 x 6
208
B 3 x 6
210
PTTWH 3 x 6
PTTWH 3 x 6
B 2.6 x 4
PTTWH 3 x 6
203
205
207
PTTWH 3 x 6
PTTWH 3 x 6
204
212
201
206
PTTWH 3 x 6
209
PWH 2 x 6
214
202
PTTWH 3 x 6

No.	Parts No.	Description
201	A-7511-750-A	MOUNTED CIRCUIT BOARD "KY-17"
202	A-7511-987-A	MOUNTED CIRCUIT BOARD "KY-42"
203	**1-507-883-00**	**JACK, SMALL TYPE, 4P**
204	**1-518-361-00**	**LAMP**
205	1-610-337-00	PRINTED CIRCUIT BOARD "JK-7"
206	2-296-522-00	BRACEKT, CONTROL, SLIDE
207	2-296-523-00	STUDE (1), PCB
208	2-296-525-00	RETAINER, METER
209	2-296-526-00	PLATE, FUNCTION SWITCH
210	2-296-527-00	HOLDER, LED
211	2-296-533-00	CUSHION, KNOB
212	2-296-537-00	HOLDER, LAMP
213	3-664-227-00	ESCUTCHEON, CONTROL
214	3-703-353-07	SUPPORT, BOARD

NOTE:

1. **The shaded and ⚠-marked components are critical to safety. Replace only with same component as specified.**
2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

Cabinet and Printed Circuit Boards Block



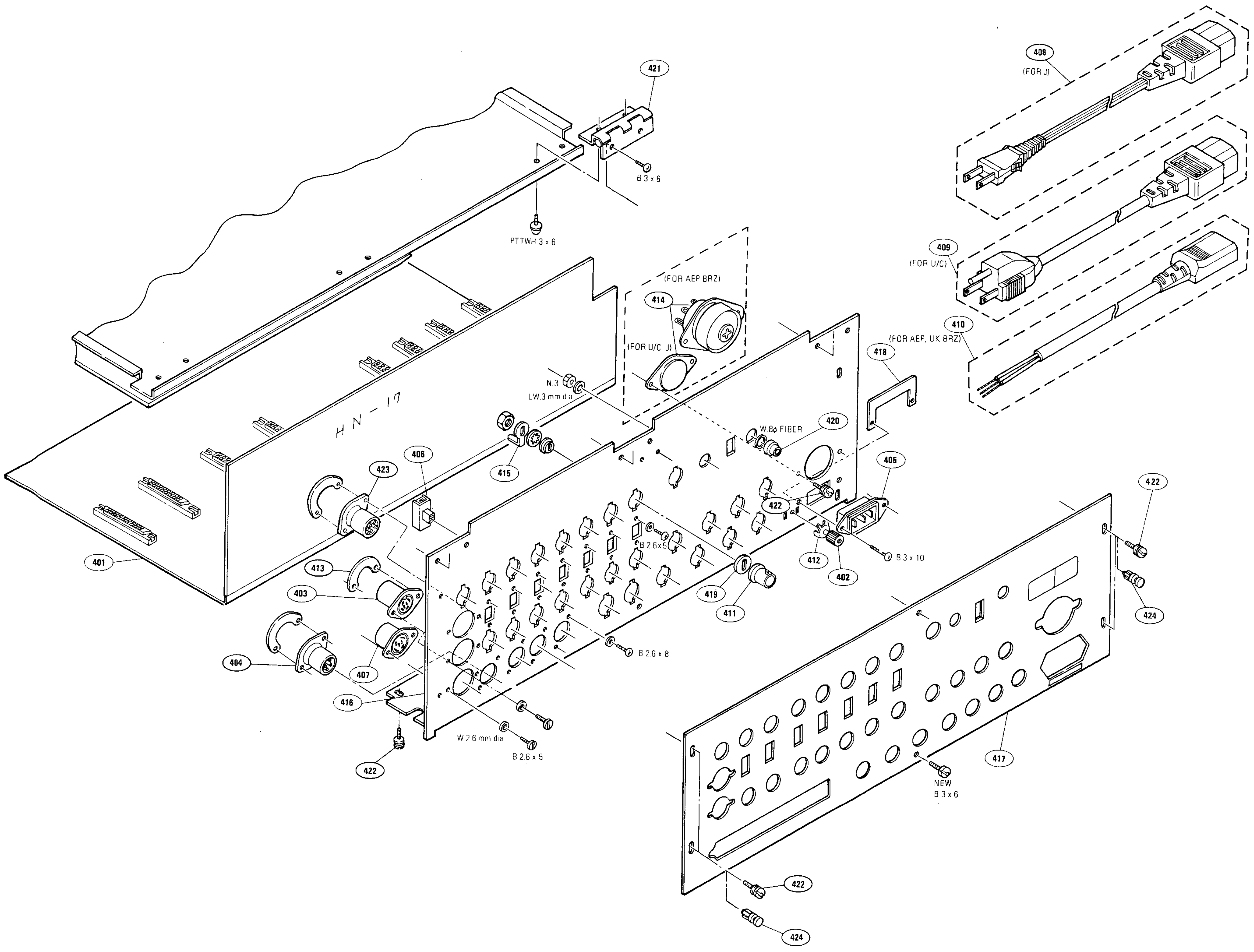
329
332
335
341
345
305 (FOR NTSC, PM)
306 (FOR PAL)
(FOR PAL) 321
(FOR NTSC, PM) 322
(FOR PM) 319
323 (FOR PAL)
(FOR NTSC, PM) 320
(FOR NTSC) 318
312 (FOR PAL)
311 (FOR PM)
310 (FOR PAL)
309 (FOR NTSC)
B 4 x 8
W 4 mm dia
(FOR PM) 303
(FOR PAL) 302
(FOR NTSC) 301
343
344
342
360
308 (FOR PAL)
307 (FOR NTSC, PM)
349
PTT 3 x 6
334
333
304
(FOR PAL, PM) 327
(FOR NTSC) 326
313 (FOR NTSC, PM)
314 (FOR PAL)
PTTWH 3 x 6
331
W 4 mm dia
347
348
W 4 mm dia
346
PWH 3 x 30
(FOR U/C) 315
316 (FOR J)
317 (FOR AEP, UK, BRZ)
328
PTTWH 3 x 4
325
PTTWH 3 x 6
B 4 x 6
336
332
W 4 mm dia
B 4 x 8
350
338
330
339
340
359
324
337
350
W 3 mm dia
B 3 x 6

No.	Parts No.	Description
301	A-7511-518-A	MOUNTED CIRCUIT BOARD "SG-35" (FOR NTSC)
302	A-7511-520-A	MOUNTED CIRCUIT BOARD "SG-34" (FOR PAL)
303	A-7511-652-A	MOUNTED CIRCUIT BOARD "SG-34" (FOR PM)
304	A-7511-729-A	MOUNTED CIRCUIT BOARD "EF-8"
305	A-7511-730-A	MOUNTED CIRCUIT BOARD "EF-9" (FOR NTSC, PM)
306	A-7511-731-A	MOUNTED CIRCUIT BOARD "EF-9" (FOR PAL)
307	A-7511-732-A	MOUNTED CIRCUIT BOARD "EF-10" (FOR NTSC, PM)
308	A-7511-733-A	MOUNTED CIRCUIT BOARD "EF-10" (FOR PAL)
309	A-7511-734-A	MOUNTED CIRCUIT BOARD "CM-11" (FOR NTSC)
310	A-7511-735-A	MOUNTED CIRCUIT BOARD "CM-11" (FOR PAL)
311	A-7511-736-A	MOUNTED CIRCUIT BOARD "CM-11" (FOR PM)
312	A-7511-741-A	MOUNTED CIRCUIT BOARD "SD-2" (FOR PAL)
313	A-7511-979-A	MOUNTED CIRCUIT BOARD "DK-4" (FOR NTSC, PM)
314	A-7511-980-A	MOUNTED CIRCUIT BOARD "DK-4" (FOR PAL)
⚠315	A-7511-981-A	MOUNTED CIRCUIT BOARD "PS-25" (FOR U/C)
⚠316	A-7511-982-A	MOUNTED CIRCUIT BOARD "PS-25" (FOR J)
⚠317	A-7511-983-A	MOUNTED CIRCUIT BOARD "PS-25" (FOR AEP, UK, BRZ)
318	A-7615-092-A	SD ASSY (FOR NTSC)
319	A-7615 093-A	SD ASSY (FOR PM)
320	A-7615-094-A	CH ASSY (FOR NTSC, PM)
321	A-7615-095-A	CH ASSY (FOR PAL)
322	A-7615-131-A	WP ASSY (FOR NTSC, PM)
323	A-7615-132-A	WP ASSY (FOR PAL)
324	X-3565-417-0	LEG ASSY
325	1-413-086-22	SWITCHING REGULATOR
⚠326	**1-447-154-00**	**TRANSFORMER, POWER (FOR NTSC)**
⚠327	**1-447-155-00**	**TRANSFORMER, POWER (FOR PAL, PM)**
328	1-610-341-00	PRINTED CIRCUIT BOARD "PS-24"
329	2-251-622-00	LEVER, PC BOARD
330	2-296-507-00	HOLDER, JACK, BATTERY
331	2-296-521-00	HOLDER, STAY
332	2-296-536-00	BRACKET,RACK
333	2-296-539-00	HOLDER, PC BOARD
334	2-296-540-00	CUSHION, PC BOARD
335	2-296-544-00	PLATE (R), SIDE
336	2-296-545-00	PLATE (L), SIDE
337	2-296-546-00	PLATE, BOTTOM
338	2-296-552-00	PANEL, FRONT
339	2-296-554-00	INSULATOR
340	3-642-310-00	HOLDER, CIRCUIT BOARD
341	3-664-236-00	INSULATOR REG
342	3-664-242-00	LID, LOWER, SG SHIELD
343	3-664-243-00	LID, UPPER, SG SHIELD
344	3-664-244-00	CASE, SHIELDE, SG
345	3-664-245-00	INSULATOR
346	3-670-521-00	ARM (A)
347	3-670-522-00	ARM (B)
348	**4-835-134-00**	**SCREW, TD 3.8x2.5**
349	4-836-132-00	SUPPORT, CIRCUIT BOARD
350	2-282-129-01	SCREW, BW3x6

NOTE:

1. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same component as specified.
2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

Connector Panel Block

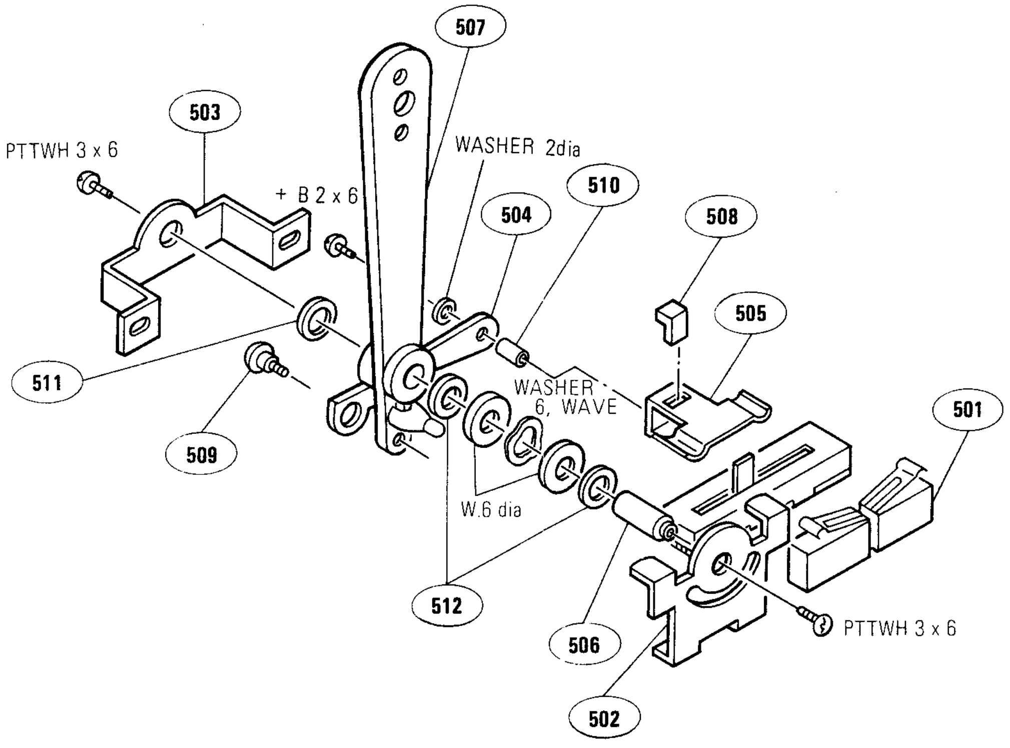

421
B3x6
PTTWH 3x6
408
(FOR J)
409
(FOR U/C)
410
(FOR AEP, UK BRZ)
(FOR AEP BRZ)
414
(FOR U/C J)
418
N3
LW3 mm dia
HN-17
W8φ FIBER
420
405
406
423
415
422
401
413
403
404
407
416
422
W2.6mm dia
B2.6x5
B2.6x5
B2.6x8
419
411
412
402
B3x10
422
424
417
NEW
B3x6
422
424

No.	Parts No.	Description
401	A-7511-831-A	MOUNTED CIRCUIT BOARD "HN-22"
402	**X-2068-004-0**	**TERMINAL ASSY**
403	**1-509-422-XX**	**RECEPTACLE, FEMALE "B/W CAMERA"**
404	**1-509-501-00**	**RECEPTACLE "TALLY/INTERCOM"**
⚠ **405**	**1-509-547-00**	**AC INLET, "AC IN" (CN36)**
406	**1-516-576-00**	**SLIDE, SWITCH**
407	**1-526-531-00**	**RECEPTACLE, MALE "EXT, DC IN"**
⚠ **408**	**1-534-754-15**	**POWER CODE (FOR J)**
⚠ **409**	**1-551-812-00**	**POWER CODE (FOR U/C)**
⚠ **410**	**1-556-760-11**	**POWER CODE (FOR AEP, UK, BRZ)**
411	**1-561-336-00**	**RECEPTACLE, MALE BNC**
412	**2-068-008-00**	**WAHSER**
413	**2-070-339-00**	**NUT, PLATE**
414	2-228-109-00	LID, MASKING (EXCEPT PAL, PM)
	⚠ **1-526-572-00**	**VOLTAGE SELECTOR (FOR PAL, PM)**
415	2-286-707-00	LUG, BNC
416	2-296-541-11	PANEL, REAR (S/N NO. Up to NOTE 4)
	2-296-541-12	PANEL, REAR (S/N NO. NOTE 5 and higher)
417	2-296-549-11	PANEL, ORNAMENTAL (S/N NO. Up to NOTE 4)
	2-296-549-12	PANEL, ORNAMENTAL (S/N NO. NOTE 5 and higher)
418	3-625-620-00	BRACKET, AC CONNECTOR
419	**3-654-545-00**	**SPACER, BNC**
420	3-664-227-00	ESCUTCHEON, CONTROL
421	**4-335-902-11**	**HINGE, BRACKET**
422	**2-282-129-01**	**SCREW, BW3x6** (S/N NO. Up to NOTE 4)
423	**1-508-055-00**	**RECEPTACLE, 6P MALE "EXT WIPE IN"**
424	**4-812-134-00**	**RIVET NYLON, 3.5 (S/N NO. NOTE 5 and higher)**

NOTE:

1. The shaded and ⚠-marked components are critical to safety.
   Replace only with same component as specified.
2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.
4. U/C .... S/N 10500
   P (AEP) .... S/N 10380
   P (UK) ..... S/N 10040
   PM (BRZ)... S/N 10005
5. U/C .... S/N 10501
   P (AEP) .... S/N 10381
   P (UK) ..... S/N 10041
   PM (BRZ)... S/N 10006

Wipe Lever Block


507
503
PTTWH 3 x 6
+ B 2 x 6
WASHER 2dia
510
504
508
505
501
511
WASHER 6, WAVE
509
W.6 dia
512
506
PTTWH 3 x 6
502

No.	Parts No.	Description
501	**1-552-665-00**	**SWITCH, MICRO**
502	2-296-509-00	BASE, FADER
503	2-296-510-00	SUPPORT, SHAFT
504	2-296-511-00	ROD
505	2-296-512-00	PLATE, SHAFT
506	2-296-513-00	SHAFT, FADER
507	2-296-514-00	LEVER, WIPE
508	2-296-529-00	PLATW, PAD
509	3-613-164-00	SHAFT, STEP
510	3-657-841-61	SPACER, 2φ
511	3-701-444-11	WASHER, 6φ
512	3-701-444-21	WASHER, 6φ

NOTE:

1. **The shaded and ⚠-marked components are critical to safety. Replace only with same component as specified.**
2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.
3. Item with no part number and/or no description are not stocked because they are seldom required for routine service.

12-3. ELECTRICAL PARTS LIST

Parts that are not listed in the "reference numbers order list" are shown in following table.
Reference numbers are omitted.

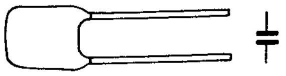
CAPACITOR

SILVERED MICA CAPACITOR 1 pF through 620 pF
±5%, 50WV

Parts No. 1-107-□□□-00

Value	Parts No. –□□□–	Value	Parts No. –□□□–	Value	Parts No. –□□□–	Value	Parts No. –□□□–
1 pF	098	15 pF	065	51 pF	078	180 pF	091
2	099	16	066	56	079	200	092
3	100	18	067	62	080	220	093
4	101	20	068	68	081	240	094
5	102	22	069	75	082	270	095
6	103	24	070	82	083	300	096
7	104	27	071	91	084	330	097
8	105	30	072	100	085	360	231
9	106	33	073	110	086	390	232
10	061	36	074	120	087	430	233
11	062	39	075	130	088	470	234
12	063	43	076	150	089	510	235
13	064	47	077	160	090	560	236
						620	237

MYLAR CAPACITOR



0.00047μF through 0.22μF
±5% 50WV

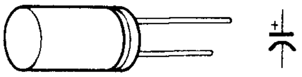
Parts No. 1-130-□□□-00

Value	Parts No. –□□□–	Value	Parts No. –□□□–	Value	Parts No. –□□□–
0.00047μF	467	0.0039μF	478	0.033μF	489
0.00056	468	0.0047	479	0.039	490
0.00068	469	0.0056	480	0.047	491
0.00082	470	0.0068	481	0.056	492
0.001	471	0.0082	482	0.068	493
0.0012	472	0.01	483	0.082	494
0.0015	473	0.012	484	0.1	495
0.0018	474	0.015	485	0.12	496
0.0022	475	0.018	486	0.15	497
0.0027	476	0.022	487	0.18	498
0.0033	477	0.027	488	0.22	499

C, ELECTROLYTIC

ELECTROLYTIC CAPACITOR

0.47μF through 470μF
6.3WV through 100WV



Parts No. 1-123-□□□-00

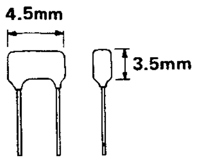
Value		Parts No. —□□□—
0.47μF	50V	379
	63	
	100	
1	50	380
	63	
	100	
2.2	50	381
	63	
	100	
3.3	50	382
	63	
	100	
4.7	25	369
	35	
	50	
	63	
	100	383
10	16	356
	25	
	35	
	50	
	63	370
	100	384
22	16	330
	25	
	35	357
	50	

Value		Parts No. —□□□—
22μF	63V	371
	100	385
33	6.3	318
	10	
	16	
	25	343
	35	
	50	372
	63	
	100	386
47	6.3	306
	10	
	16	332
	25	
	35	359
	50	
	63	373
	100	387
100	6.3	307
	10	
	16	333
	25	
	35	345
	50	360
	63	374

Value		Parts No. —□□□—
100μF	100V	388
220	6.3	308
	10	
	16	321
	25	334
	35	346
	50	361
	63	375
	100	389
330	6.3	309
	10	
	16	322
	25	335
	35	347
	50	362
	63	376
	100	390
470	6.3	298
	10	310
	16	323
	25	336
	35	348
	50	363
	63	377
	100	391

RESISTOR

METAL FILM RESISTOR



± 1%, 1/8W
10Ω through 33 kΩ

Parts No. 1-214-□□□-00

Value	Parts No. −□□□−
10Ω	509
11	510
12	511
13	512
15	513
16	514
18	515
20	516
22	517
24	518
27	519
30	520
33	521
36	522
39	523
43	524
47	525
51	526
56	527
62	528
68	529
75	530
82	531
91	532

Value	Parts No. −□□□−
100Ω	533
110	534
120	535
130	536
150	537
160	538
180	539
200	540
220	541
240	542
270	543
300	544
330	545
360	546
390	547
430	548
470	549
510	550
560	551
620	552
680	553
750	554
820	555
910	556

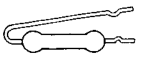
Value	Parts No. −□□□−
1.0kΩ	557
1.1	558
1.2	559
1.3	560
1.5	561
1.6	562
1.8	563
2.0	564
2.2	565
2.4	566
2.7	567
3.0	568
3.3	569
3.6	570
3.9	571
4.3	572
4.7	573
5.1	574
5.6	575
6.2	576
6.8	577
7.5	578
8.2	579
9.1	580

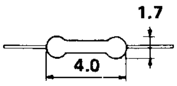
Value	Parts No. −□□□−
10kΩ	581
11	582
12	583
13	584
15	585
16	586
18	587
20	588
22	589
24	590
27	591
30	592
33	593

R, CARBON

CARBON RESISTOR (1/8W)

±5%, 1/8W, non-special type
2.2Ω through 1MΩ





Parts No. 1-246-□□□-00

Value	Parts No. –□□□–
1Ω	–
1.1	–
1.2	–
1.3	–
1.5	–
1.6	–
1.8	–
2	–
2.2	751
2.4	812
2.7	752
3	813
3.3	753
3.6	814
3.9	754
4.3	815
4.7	755
5.1	816
5.6	756
6.2	817
6.8	757
7.5	818
8.2	758
9.1	819
10Ω	759
11	820
12	760
13	821
15	761
16	822
18	762
20	823
22	763
24	824
27	764
30	825

Value	Parts No. –□□□–
33Ω	765
36	826
39	766
43	827
47	767
51	828
56	768
62	829
68	769
75	830
82	770
91	831
100Ω	771
110	832
120	772
130	833
150	773
160	834
180	774
200	835
220	775
240	836
270	776
300	837
330	777
360	838
390	778
430	839
470	779
510	840
560	780
620	841
680	781
750	842
820	782
910	843

Value	Parts No. –□□□–
1kΩ	783
1.1	844
1.2	784
1.3	845
1.5	785
1.6	846
1.8	786
2	847
2.2	787
2.4	848
2.7	788
3.0	849
3.3	789
3.6	850
3.9	790
4.3	851
4.7	791
5.1	852
5.6	792
6.2	853
6.8	793
7.5	854
8.2	794
9.1	855
10kΩ	795
11	856
12	796
13	857
15	797
16	858
18	798
20	859
22	799
24	860
27	800
30	861

Value	Parts No. –□□□–
33kΩ	801
36	862
39	802
43	863
47	803
51	864
56	804
62	865
68	805
75	866
82	806
91	867
100kΩ	807
110	868
120	808
130	869
150	809
160	870
180	810
200	871
220	811

Parts No. 1-247-□□□-00

Value	Parts No. –□□□–
240kΩ	054
270	046
300	055
330	047
360	056
390	048
430	057
470	049
510	058
560	050
620	059
680	051
750	060
820	052
910	061
1MΩ	053

CONNECTOR

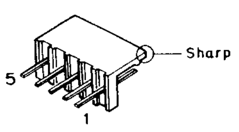
ABBREVIATION

REF. No.	DESCRIPTION	REF. No.	DESCRIPTION	REF. No.	DESCRIPTION
C	CAPACITOR	IC	IC	RV	VARIABLE RESISTOR
CN	CONNECTOR	L	INDUCTOR	RY	RELAY
CV	VARIABLE CAPACITOR	M	METER	S	SWITCH
D	DIODE	PL	LAMP	T	TRANSFORMER
DL	DELAY LINE	Q	TRANSISTOR	TH	THERMISTOR
F	FUSE	R	RESISTOR	X	OSCILATOR

All capacitors are in micro faraols unless otherwise specified.
All inductors are in micro henries unless otherwise specified.
All resistors are in ohms.

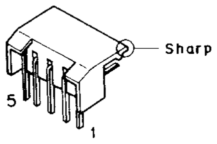
CONNECTOR

top-type receptacle



2P	1-560-356-00
3P	1-560-357-00
4P	1-560-358-00
5P	1-560-359-00
6P	1-560-360-00
8P	1-560-361-00
10P	1-560-362-00
12P	1-560-363-00

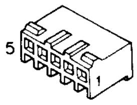
side-type receptacle



2P	1-560-364-00
3P	1-560-365-00
4P	1-560-366-00
5P	1-560-367-00
6P	1-560-368-00
8P	1-560-369-00
10P	1-560-370-00
12P	1-560-371-00

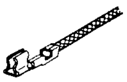
plug

housing



2P	1-561-514-00
3P	1-561-515-00
4P	1-561-516-00
5P	1-561-517-00
6P	1-561-518-00
8P	1-561-519-00
10P	1-561-520-00
12P	1-561-521-00

contact



1-560-372-00

AC-31 BOARD (NTSC)
AC-31A BOARD (PAL, PAL-M)

Ref. No.	Parts No.	Description
	1-606-078-12	PRINTED CIRCUIT BOARD "AC-31" (NTSC)
	1-606-078-22	PRINTED CIRCUIT BOARD "AC-31A" (PAL, PAL-M)
	1-517-072-00	**HOLDER, FUSE (NTSC)**
	1-533-131-00	**HOLDER, FUSE (PAL, PAL-M)**
	⚠1-535-173-00	**TERMINAL, INSERT**
C1	**1-108-389-00**	**MYLAR 0.1 10% 100V**
C2	**1-108-389-00**	**MYLAR 0.1 10% 100V**
C3	**1-108-389-00**	**MYLAR 0.1 10% 100V**
C4	**1-108-389-00**	**MYLAR 0.1 10% 100V**
C5	**1-108-389-00**	**MYLAR 0.1 10% 100V**
⚠C6	**1-130-238-00**	**MYLAR 0.22 20% 125V (NTSC)**
⚠C6	**1-130-160-00**	**MYLAR 0.22 20% 250V (PAL, PAL-M)**
C7	**1-125-275-00**	**ELECT(BLOCK) 10000 99% 35V**
CN1	1-508-902-00	RECEPTACLE, 4P MALE
	1-509-985-00	PLUG HOUSING 4P
	1-509-982-00	PLUG CONTACT
D1	**8-719-851-51**	**S5151**
D2	**8-719-801-51**	**S5151R**
⚠F1	**1-532-268-XX**	**2A (U/C)**
⚠F1	**1-532-203-00**	**2A TIME-LAG (PAL, PAL-M)**
⚠F2	**1-532-403-XX**	**3.15A (U/C)**
⚠F2	**1-532-237-00**	**3.15A TIME-LAG (PAL, PAL-M)**

NOTE:

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CH-7 BOARD

Ref. No.	Parts No.	Description
	A-7615-094-A	ADJUSTED CIRCUIT BOARD "CH-7"
	1-560-427-00	RECEPTACLE 45P MALE
C6	**1-107-210-00**	**MICA 22PF 5% 500V**
C11	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C12	**1-123-622-00**	**ELECT 22 20% 16V**
C14	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C17	**1-123-611-00**	**ELECT 1 20% 50V**
C20	**1-123-622-00**	**ELECT 22 20% 16V**
C21	**1-123-622-00**	**ELECT 22 20% 16V**
C22	**1-123-622-00**	**ELECT 22 20% 16V**
C23	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C24	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C25	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C26	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C27	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C28	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C30	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C31	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C33	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C36	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C37	**1-123-617-00**	**ELECT 10 20% 16V**
C38	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C39	**1-123-617-00**	**ELECT 10 20% 16V**
C40	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
D1	**8-719-815-55**	**1S1555**
D2	**8-719-815-55**	**1S1555**
D3	**8-719-815-55**	**1S1555**
D4	**8-719-815-55**	**1S1555**
D5	**8-719-815-55**	**1S1555**
D6	**8-719-815-55**	**1S1555**
D7	**8-719-815-55**	**1S1555**
D8	**8-719-815-55**	**1S1555**
D9	**8-719-815-55**	**1S1555**
D10	**8-719-815-55**	**1S1555**
D11	**8-719-815-55**	**1S1555**
D12	**8-719-815-55**	**1S1555**
D13	**8-719-100-27**	**RD4.7EB2**
IC1	**8-759-901-07**	**SN74LS107AN: TI**
IC2	**8-759-245-28**	**TC4528BP: TOSHIBA**
IC3	**8-759-245-28**	**TC4528BP: TOSHIBA**
IC4	**8-759-240-42**	**TC4042BP: TOSHIBA**
IC5	**8-759-240-28**	**TC4028BP: TOSHIBA**

Ref. No.	Parts No.	Description
IC6	8-759-240-53	TC4053BP: TOSHIBA
IC7	8-759-240-53	TC4053BP: TOSHIBA
IC8	8-759-133-90	μPC339C: NEC
IC9	8-759-133-90	μPC339C: NEC
IC10	8-759-240-53	TC4053BP: TOSHIBA
Q1	8-729-117-54	2SA1175
Q2	8-729-606-32	2SC2603
Q3	8-729-113-32	2SB733
Q4	8-729-606-32	2SC2603
Q5	8-729-606-32	2SC2603
Q6	8-729-606-32	2SC2603
Q7	8-729-606-32	2SC2603
Q8	8-729-606-32	2SC2603
Q9	8-729-606-32	2SC2603
Q10	8-729-606-32	2SC2603
Q11	8-729-117-54	2SA1175
Q12	8-729-117-54	2SA1175
Q13	8-729-606-32	2SC2603
Q14	8-729-606-32	2SC2603
Q15	8-729-117-54	2SA1175
Q16	8-729-606-32	2SC2603
Q17	8-729-606-32	2SC2603
Q18	8-729-606-32	2SC2603
Q19	8-729-606-32	2SC2603
Q20	8-729-117-54	2SA1175
Q21	8-729-117-54	2SA1175
Q22	8-729-606-32	2SC2603
R8	1-247-232-00	CARBON 470 5% 1/2W
RV1	1-226-703-00	METAL 10K
RV2	1-226-703-00	METAL 10K
RV3	1-226-773-00	METAL 22K
RV4	1-226-702-00	METAL 2.2K
RV5	1-226-702-00	METAL 2.2K
RV6	1-226-702-00	METAL 2.2K
RV7	1-226-773-00	METAL 22K
RV8	1-226-702-00	METAL 2.2K

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Ref. No.	Parts No.	Description
CM-11 BOARD		
	A-7511-734-A	MOUNTED CIRCUIT BOARD "CM-11" (NTSC)
	A-7511-735-A	MOUNTED CIRCUIT BOARD "CM-11" (PAL)
	A-7511-736-A	MOUNTED CIRCUIT BOARD "CM-11" (PAL-M)
C4	1-102-106-00	CERAMIC 100PF 10% 50V
C6	1-123-617-00	ELECT 10 20% 16V
C10	1-107-159-00	MICA 33PF 5% 500V
C11	1-107-159-00	MICA 33PF 5% 500V
C12	1-130-516-00	MYLAR 0.01 10% 50V
C13	1-130-516-00	MYLAR 0.01 10% 50V
C14	1-123-617-00	ELECT 10 20% 16V
C15	1-123-617-00	ELECT 10 20% 16V
C16	1-123-617-00	ELECT 10 20% 16V
C17	1-123-617-00	ELECT 10 20% 16V (PAL, PAL-M)
C18	1-130-516-00	MYLAR 0.01 10% 50V
C19	1-130-516-00	MYLAR 0.01 10% 50V
C22	1-130-516-00	MYLAR 0.01 10% 50V
C23	1-130-516-00	MYLAR 0.01 10% 50V
C24	1-123-617-00	ELECT 10 20% 16V
C25	1-123-617-00	ELECT 10 20% 16V
C26	1-123-617-00	ELECT 10 20% 16V
C28	1-123-617-00	ELECT 10 20% 16V
C29	1-161-013-00	CERAMIC 0.01 10% 25V
C30	1-123-617-00	ELECT 10 20% 16V
C31	1-161-013-00	CERAMIC 0.01 10% 25V
C33	1-123-617-00	ELECT 10 20% 16V
C35	1-123-617-00	ELECT 10 20% 16V
C36	1-130-516-00	MYLAR 0.01 10% 50V
C37	1-107-159-00	MICA 33PF 5% 500V
C38	1-107-159-00	MICA 33PF 5% 500V
C43	1-123-617-00	ELECT 10 20% 16V
C44	1-123-617-00	ELECT 10 20% 16V
C47	1-123-617-00	ELECT 10 20% 16V
C48	1-107-159-00	MICA 33PF 5% 500V (NTSC)
C48	1-107-210-00	MICA 22PF 5% 500V (PAL, PAL-M)
C49	1-107-159-00	MICA 33PF 5% 500V (NTSC)
C49	1-107-210-00	MICA 22PF 5% 500V (PAL, PAL-M)
C50	1-107-159-00	MICA 33PF 5% 500V (NTSC)
C50	1-107-210-00	MICA 22PF 5% 500V (PAL, PAL-M)
C51	1-107-159-00	MICA 33PF 5% 500V (NTSC)
C51	1-107-210-00	MICA 22PF 5% 500V (PAL, PAL-M)
C56	1-161-013-00	CERAMIC 0.01 10% 25V
C58	1-130-628-00	MYLAR 0.047 10% 50V
C59	1-123-617-00	ELECT 10 20% 16V

CM-11

Ref. No.	Parts No.	Description
C60	**1-130-628-00**	**MYLAR 0.047 10% 50V**
C62	**1-130-628-00**	**MYLAR 0.047 10% 50V**
C65	**1-130-628-00**	**MYLAR 0.047 10% 50V**
C66	**1-130-628-00**	**MYLAR 0.047 10% 50V**
C68	**1-130-516-00**	**MYLAR 0.01 10% 50V**
C69	**1-130-628-00**	**MYLAR 0.047 10% 50V**
C81	**1-130-516-00**	**MYLAR 0.01 10% 50V**
C83	**1-107-207-00**	**MICA 16PF 5% 500V**
C87	**1-107-202-00**	**MICA 10PF 5% 500V**
CN1	1-560-427-00	RECEPTACLE, 45P MALE
D1	**8-719-815-55**	**1S1555**
D2	**8-719-815-55**	**1S1555**
D3	**8-719-815-55**	**1S1555**
D4	**8-719-815-55**	**1S1555**
D5	**8-719-815-55**	**1S1555**
D6	**8-719-904-73**	**1S2473VE**
IC1	**8-759-900-26**	**SN74LS26N: TI**
IC2	**8-759-240-49**	**TC4049BP: TOSHIBA**
IC3	**8-759-240-69**	**TC4069UBP: TOSHIBA**
IC4	**8-759-240-11**	**TC4011BP: TOSHIBA**
IC7	**8-751-200-00**	**CX120: SONY**
IC8	**8-759-014-96**	**MC1496P: MOTOROLA**
IC9	**8-759-014-96**	**MC1496P: MOTOROLA**
IC10	**8-759-930-54**	**CA3054: RCA**
IC11	**8-759-930-54**	**CA3054: RCA**
IC12	**8-759-930-54**	**CA3054: RCA**
L1	**1-407-574-00**	**VARIABLE 68**
L2	**1-407-574-00**	**VARIABLE 68**
L4	**1-407-574-00**	**VARIABLE 68 (NTSC)**
L4	**1-407-573-00**	**VARIABLE 47 (PAL, PAL-M)**
L5	**1-407-574-00**	**VARIABLE 68 (NTSC)**
L5	**1-407-573-00**	**VARIABLE 47 (PAL, PAL-M)**
L6	**1-407-167-XX**	**MICRO 68 (NTSC)**
L6	**1-407-164-XX**	**MICRO 39 (PAL, PAL-M)**
L7	**1-407-164-XX**	**MICRO 39**
L8	**1-407-170-XX**	**MICRO 120 (NTSC)**
L8	**1-407-173-XX**	**MICRO 220 (PAL, PAL-M)**

Ref. No.	Parts No.	Description
Q1	**8-729-606-32**	**2SC2603**
Q2	**8-729-606-32**	**2SC2603**
Q3	**8-729-606-32**	**2SC2603**
Q4	**8-729-117-54**	**2SA1175**
Q6	**8-729-117-54**	**2SA1175**
Q7	**8-729-606-32**	**2SC2603**
Q8	**8-729-606-32**	**2SC2603** (PAL, PAL-M)
Q10	**8-729-606-32**	**2SC2603**
Q11	**8-729-117-54**	**2SA1175**
Q12	**8-729-117-54**	**2SA1175**
Q13	**8-729-606-32**	**2SC2603**
Q14	**8-729-117-54**	**2SA1175**
Q15	**8-729-117-54**	**2SA1175**
Q16	**8-765-222-20**	**2SC1963**
Q17	**8-765-222-20**	**2SC1963**
Q18	**8-765-222-20**	**2SC1963**
Q19	**8-765-222-20**	**2SC1963**
Q20	**8-729-606-32**	**2SC2603**
Q21	**8-729-606-32**	**2SC2603**
Q22	**8-729-606-32**	**2SC2603**
Q23	**8-729-117-54**	**2SA1175**
Q24	**8-729-606-32**	**2SC2603**
Q25	**8-729-606-32**	**2SC2603**
Q26	**8-729-117-54**	**2SA1175**
Q27	**8-729-606-32**	**2SC2603**
Q28	**8-729-606-32**	**2SC2603**
Q29	**8-729-606-32**	**2SC2603**
Q30	**8-729-606-32**	**2SC2603**
Q31	**8-729-606-32**	**2SC2603**
Q32	**8-729-606-32**	**2SC2603**
Q33	**8-729-606-32**	**2SC2603**
Q34	**8-729-606-32**	**2SC2603**
Q35	**8-729-117-54**	**2SA1175**
Q36	**8-729-117-54**	**2SA1175**
Q37	**8-729-606-32**	**2SC2603**
Q38	**8-729-606-32**	**2SC2603**
Q39	**8-729-384-48**	**2SA844**
Q40	**8-729-117-54**	**2SA1175**
Q41	**8-729-177-43**	**2SD774**
Q42	**8-729-606-32**	**2SC2603**
Q43	**8-729-606-32**	**2SC2603**
Q44	**8-729-606-32**	**2SC2603**
Q45	**8-729-606-32**	**2SC2603**
Q46	**8-729-606-32**	**2SC2603**
Q47	**8-729-606-32**	**2SC2603**
Q48	**8-729-606-32**	**2SC2603**
Q49	**8-729-606-32**	**2SC2603**

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Ref. No.	Parts No.	Description
R105	**1-215-825-00**	**METAL 62K 1% 0.1W**
R163	**1-246-446-00**	**CARBON 75 5% 1/4W**
RV1	**1-226-701-00**	**METAL 220 (PAL, PAL-M)**
RV2	**1-226-701-00**	**METAL 220**
RV3	**1-226-702-00**	**METAL 2.2K**
RV4	**1-226-703-00**	**METAL 10K**
RV5	**1-226-772-00**	**METAL 4.7K**
RV6	**1-226-703-00**	**METAL 10K**
RV7	**1-226-703-00**	**METAL 10K**
RV8	**1-226-771-00**	**METAL 1K**
RV9	**1-226-771-00**	**METAL 1K**
RV11	**1-226-772-00**	**METAL 4.7K**
RV12	**1-226-770-00**	**METAL 470**
RV13	**1-226-702-00**	**METAL 2.2K**
RV14	**1-226-702-00**	**METAL 2.2K**
RV15	**1-226-771-00**	**METAL 1K**
RV16	**1-226-771-00**	**METAL 1K**
TH1	**1-800-071-XX**	**DIRECT-HEATING DISK 300Ω**
TH2	**1-800-071-XX**	**DIRECT-HEATING DISK 300Ω**

CT-18 BOARD

Ref. No.	Parts No.	Description
	1-606-082-00	PRINTED CIRCUIT BOARD "CT-18"
RV1	**1-226-342-00**	**5K "BACKGROUND COLOR"**

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CT-19 BOARD

Ref. No.	Parts No.	Description
	1-606-083-00	PRINTED CIRCUIT BOARD "CT-19"
RV1	**1-228-441-00**	**SLIDE 5K "DSK PGM/INSERT LEVEL"**
S1	**1-552-665-00**	**MICRO "PGM LIMITER"**
S2	**1-552-665-00**	**MICRO "INSERT LIMITER"**

DK-4 BOARD

Ref. No.	Parts No.	Description
	A-7511-979-A	MOUNTED CIRCUIT BOARD "DK-4" (NTSC, PAL-M)
	A-7511-980-A	MOUNTED CIRCUIT BOARD "DK-4" (PAL)
	1-560-427-00	RECEPTACLE, 45P MALE
C2	**1-123-607-00**	**ELECT 0.1 20% 50V**
C3	**1-123-617-00**	**ELECT 10 20% 16V**
C4	**1-123-617-00**	**ELECT 10 20% 16V**
C5	**1-123-617-00**	**ELECT 10 20% 16V**
C6	**1-123-617-00**	**ELECT 10 20% 16V**
C7	**1-123-607-00**	**ELECT 0.1 20% 16V**
C8	**1-123-617-00**	**ELECT 10 20% 16V**
C9	**1-123-617-00**	**ELECT 10 20% 16V**
C11	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C12	**1-123-617-00**	**ELECT 10 20% 16V**
C13	**1-123-617-00**	**ELECT 10 20% 16V**
C14	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C15	**1-123-617-00**	**ELECT 10 20% 16V**
C16	**1-123-617-00**	**ELECT 10 20% 16V**
C17	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C19	**1-123-617-00**	**ELECT 10 20% 16V**
C20	**1-123-607-00**	**ELECT 0.1 20% 50V**
C21	**1-123-617-00**	**ELECT 10 20% 16V**
C22	**1-123-617-00**	**ELECT 10 20% 16V**
C23	**1-123-617-00**	**ELECT 10 20% 16V**

Ref. No.	Parts No.	Description
C24	1-123-607-00	ELECT 0.1 20% 50V
C25	1-102-106-00	CERAMIC 100PF 10% 50V
C26	1-161-013-00	CERAMIC 0.01 10% 25V
C28	1-123-617-00	ELECT 10 20% 16V
C29	1-123-607-00	ELECT 0.1 20% 50%
C31	1-123-617-00	ELECT 10 20% 16V
C32	1-123-617-00	ELECT 10 20% 16V
C33	1-123-607-00	ELECT 0.1 20% 50V
C35	1-124-143-00	ELECT 100 20% 16V
C36	1-123-617-00	ELECT 10 20% 16V
C37	1-123-617-00	ELECT 10 20% 16V
C39	1-123-617-00	ELECT 10 20% 16V
C53	1-123-617-00	ELECT 10 20% 16V
C54	1-124-143-00	ELECT 100 20% 16V
C55	1-124-143-00	ELECT 100 20% 16V
C63	1-123-617-00	ELECT 10 20% 16V
C64	1-123-607-00	ELECT 0.1 20% 50V
C66	1-123-617-00	ELECT 10 20% 16V
C67	1-123-617-00	ELECT 10 20% 16V
C68	1-123-607-00	ELECT 0.1 20% 50V
C70	1-124-143-00	ELECT 100 20% 16V
C71	1-123-617-00	ELECT 10 20% 16V
C72	1-123-617-00	ELECT 10 20% 16V
C74	1-123-617-00	ELECT 10 20% 16V
C77	1-123-617-00	ELECT 10 20% 16V
C79	1-124-143-00	ELECT 100 20% 16V
C80	1-124-143-00	ELECT 100 20% 16V
C81	1-124-143-00	ELECT 100 20% 16V
C100	1-101-880-00	CERAMIC 47PF 5% 50V
C101	1-101-880-00	CERAMIC 47PF 5% 50V
C102	1-124-144-00	ELECT 220 20% 16V
C103	1-124-144-00	ELECT 220 20% 16V
C105	1-107-159-00	MICA 33PF 5% 500V
C106	1-107-159-00	MICA 33PF 5% 500V
C107	1-107-202-00	MICA 10PF 5% 500V
C108	1-107-202-00	MICA 10PF 5% 500V
C300	1-161-013-00	CERAMIC 0.01 10% 25V
C301	1-161-013-00	CERAMIC 0.01 10% 25V
CV1	1-141-084-XX	CERAMIC 55P
CV2	1-141-084-XX	CERAMIC 55P
D1	8-719-815-55	1S1555
D2	8-719-815-55	1S1555
D3	8-719-815-55	1S1555
D4	8-719-133-07	RD3.3EB
D5	8-719-815-55	1S1555

Ref. No.	Parts No.	Description
D6	8-719-815-55	1S1555
D7	8-719-815-55	1S1555
D8	8-719-815-55	1S1555
D9	8-719-815-55	1S1555
D10	8-719-815-55	1S1555
D11	8-719-815-55	1S1555
D12	8-719-815-55	1S1555
IC1	8-749-939-92	BX3992: SONY
IC2	8-759-240-53	TC4053BP: TOSHIBA
IC3	8-749-939-92	BX3992: SONY
IC4	8-759-240-53	TC4053BP: TOSHIBA
IC5	8-749-939-92	BX3992: SONY
IC6	8-749-939-91	BX3991: SONY
IC7	8-758-140-00	CX814: SONY
IC8	8-758-140-00	CX814: SONY
IC9	8-749-939-92	BX3992: SONY
IC10	8-749-939-91	BX3991: SONY
IC11	8-758-140-00	CX814: SONY
IC12	8-758-140-00	CX814: SONY
IC13	8-758-140-00	CX814: SONY
L1	1-407-165-XX	MICRO 47
L2	1-407-165-XX	MICRO 47
L3	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L3	1-407-161-XX	MICRO 22 (PAL)
L4	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L4	1-407-161-XX	MICRO 22 (PAL)
L5	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L5	1-407-161-XX	MICRO 22 (PAL)
L6	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L6	1-407-161-XX	MICRO 22 (PAL)
Q1	8-729-117-54	2SA1175
Q2	8-729-606-32	2SC2603
Q3	8-729-606-32	2SC2603
Q4	8-729-606-32	2SC2603
Q5	8-729-117-54	2SA1175
Q6	8-729-117-54	2SA1175
Q7	8-729-117-54	2SA1175
Q8	8-729-117-54	2SA1175
Q9	8-729-606-32	2SC2603
Q10	8-729-606-32	2SC2603

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Ref. No.	Parts No.	Description
Q11	8-729-606-32	2SC2603
Q12	8-729-606-32	2SC2603
Q13	8-729-117-54	2SA1175
Q14	8-729-117-54	2SA1175
Q15	8-729-606-32	2SC2603
Q16	8-729-606-32	2SC2603
Q17	8-729-117-54	2SA1175
Q18	8-729-117-54	2SA1175
Q19	8-729-606-32	2SC2603
Q20	8-729-606-32	2SC2603
Q21	8-729-606-32	2SC2603
Q22	8-729-117-54	2SA1175
Q23	8-729-606-32	2SC2603
Q24	8-729-384-48	2SA844
Q25	8-729-117-54	2SA1175
Q26	8-729-384-48	2SA844
Q27	8-729-117-54	2SA1175
Q28	8-729-384-48	2SA844
Q29	8-729-117-54	2SA1175
Q30	8-729-384-48	2SA844
Q31	8-729-117-54	2SA1175
Q100	8-729-117-54	2SA1175
Q101	8-729-117-54	2SA1175
Q102	8-729-117-54	2SA1175
Q103	8-729-117-54	2SA1175
R32	1-215-825-00	METAL 62K 1% 0.1W
RV1	1-226-703-00	METAL 10K
RV2	1-226-702-00	METAL 2.2K
RV3	1-226-771-00	METAL 1K
RV4	1-226-771-00	METAL 1K
RV5	1-226-771-00	METAL 1K
RV6	1-226-771-00	METAL 1K
RV7	1-226-771-00	METAL 1K
RV8	1-226-771-00	METAL 1K
RV9	1-226-771-00	METAL 1K
RV10	1-226-771-00	METAL 1K

Ref. No.	Parts No.	Description
EF-8 BOARD		
	A-7511-729-A	MOUNTED CIRCUIT BOARD "EF-8"
C9	1-161-013-00	CERAMIC 0.01 10% 25V
C10	1-123-622-00	ELECT 22 20% 16V
C11	1-161-013-00	CERAMIC 0.01 10% 25V
C12	1-123-622-00	ELECT 22 20% 16V
C13	1-161-013-00	CERAMIC 0.01 10% 25V
C14	1-123-622-00	ELECT 22 20% 16V
C15	1-161-013-00	CERAMIC 0.01 10% 25V
C18	1-107-206-00	MICA 15PF 5% 500V
C20	1-123-622-00	ELECT 22 20% 16V
C21	1-161-013-00	CERAMIC 0.01 10% 25V
C24	1-107-206-00	MICA 15PF 5% 500V
C26	1-123-622-00	ELECT 22 20% 16V
C27	1-161-013-00	CERAMIC 0.01 10% 25V
C28	1-107-210-00	MICA 22PF 5% 500V
C29	1-107-210-00	MICA 22PF 5% 500V
C32	1-131-373-00	TANTALUM 22 10% 16V
C33	1-131-373-00	TANTALUM 22 10% 16V
C34	1-131-373-00	TANTALUM 22 10% 16V
C35	1-131-373-00	TANTALUM 22 10% 16V
C36	1-131-373-00	TANTALUM 22 10% 16V
C37	1-131-373-00	TANTALUM 22 10% 16V
C38	1-131-373-00	TANTALUM 22 10% 16V
C39	1-131-373-00	TANTALUM 22 10% 16V
C40	1-131-373-00	TANTALUM 22 10% 16V
C41	1-131-373-00	TANTALUM 22 10% 16V
C42	1-131-373-00	TANTALUM 22 10% 16V
C43	1-131-373-00	TANTALUM 22 10% 16V
CN1	1-560-427-00	RECEPTACLE, 45P MALE
CV1	1-141-084-XX	CERAMIC
CV2	1-141-084-XX	CERAMIC
D1	8-719-815-55	1S1555
D2	8-719-904-73	1S2473VE
D3	8-719-904-73	1S2473VE
D4	8-719-904-73	1S2473VE
D5	8-719-904-73	1S2473VE

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Ref. No.	Parts No.	Description
DL1	**1-415-261-00**	**20nS**
DL2	**1-415-261-00**	**20nS**
IC1	**8-749-939-89**	**BX3989: SONY**
IC2	**8-749-939-90**	**BX3990: SONY**
IC3	**8-749-939-89**	**BX3989: SONY**
IC4	**8-749-939-90**	**BX3990: SONY**
IC5	**8-749-939-89**	**BX3989: SONY**
IC6	**8-749-939-90**	**BX3990: SONY**
IC7	**8-749-939-89**	**BX3989: SONY**
IC8	**8-749-939-90**	**BX3990: SONY**
L1	**1-407-164-XX**	**MICRO 39**
L2	**1-407-164-XX**	**MICRO 39**
L3	**1-407-164-XX**	**MICRO 39**
L4	**1-407-164-XX**	**MICRO 39**
L5	**1-407-164-XX**	**MICRO 39**
L6	**1-407-164-XX**	**MICRO 39**
Q1	**8-729-117-54**	**2SA1175**
Q2	**8-729-117-54**	**2SA1175**
Q3	**8-729-117-54**	**2SA1175**
Q4	**8-729-117-54**	**2SA1175**
Q5	**8-729-117-54**	**2SA1175**
Q6	**8-729-117-54**	**2SA1175**
Q7	**8-729-606-32**	**2SC2603**
Q8	**8-729-117-54**	**2SA1175**
Q9	**8-729-606-32**	**2SC2603**
Q10	**8-729-117-54**	**2SA1175**
Q11	**8-729-117-54**	**2SA1175**
Q12	**8-729-117-54**	**2SA1175**
Q13	**8-729-117-54**	**2SA1175**
Q14	**8-729-117-54**	**2SA1175**
RV1	**1-226-701-00**	**METAL 220**
RV2	**1-226-701-00**	**METAL 220**
TH1	**1-800-199-00**	**1250Ω**
TH2	**1-800-199-00**	**1250Ω**

Ref. No.	Parts No.	Description
EF-9 BOARD		
	A-7511-730-A	MOUNTED CIRCUIT BOARD "EF-9" (NTSC, PAL-M)
	A-7511-731-A	MOUNTED CIRCUIT BOARD "EF-9" (PAL)
C1	**1-123-619-00**	**ELECT 4.7 20% 50V**
C5	**1-123-617-00**	**ELECT 10 20% 16V**
C6	**1-123-617-00**	**ELECT 10 20% 16V**
C7	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C8	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C9	**1-123-617-00**	**ELECT 10 20% 16V**
C10	**1-123-617-00**	**ELECT 10 20% 16V**
C12	**1-123-617-00**	**ELECT 10 20% 16V**
C13	**1-123-617-00**	**ELECT 10 20% 16V**
C16	**1-123-619-00**	**ELECT 4.7 20% 50V**
C20	**1-123-617-00**	**ELECT 10 20% 16V**
C21	**1-123-617-00**	**ELECT 10 20% 16V**
C22	**1-123-617-00**	**ELECT 10 20% 16V**
C23	**1-123-617-00**	**ELECT 10 20% 16V**
C27	**1-123-617-00**	**ELECT 10 20% 16V**
C30	**1-123-617-00**	**ELECT 10 20% 16V**
C31	**1-123-617-00**	**ELECT 10 20% 16V**
C34	**1-123-617-00**	**ELECT 10 20% 16V**
C35	**1-123-617-00**	**ELECT 10 20% 16V**
C36	**1-123-617-00**	**ELECT 10 20% 16V**
C42	**1-123-617-00**	**ELECT 10 20% 16V**
C43	**1-123-617-00**	**ELECT 10 20% 16V**
C46	**1-123-617-00**	**ELECT 10 20% 16V**
C47	**1-123-617-00**	**ELECT 10 20% 16V**
C49	**1-123-617-00**	**ELECT 10 20% 16V**
C50	**1-123-617-00**	**ELECT 10 20% 16V**
C53	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C54	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C55	**1-123-611-00**	**ELECT 1 20% 50V**
C56	**1-123-617-00**	**ELECT 10 20% 16V**
C57	**1-123-617-00**	**ELECT 10 20% 16V**
C58	**1-123-617-00**	**ELECT 10 20% 16V**
CN1	1-560-427-00	RECEPTACLE, 45P MALE

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Ref. No.	Parts No.	Description
CV1	1-141-084-XX	CERAMIC 55PF
CV2	1-141-084-XX	CERAMIC 55PF
CV3	1-141-084-XX	CERAMIC 55PF
CV4	1-141-084-XX	CERAMIC 55PF
CV5	1-141-084-XX	CERAMIC 55PF
CV6	1-141-084-XX	CERAMIC 55PF
D1	8-719-815-55	1S1555
D2	8-719-815-55	1S1555
D3	8-719-815-55	1S1555
D4	8-719-904-73	1S2473VE
D5	8-719-904-73	1S2473VE
D6	8-719-904-73	1S2473VE
IC1	8-749-939-90	BX3990: SONY
IC2	8-749-939-91	BX3991: SONY
IC3	8-749-939-90	BX3990: SONY
IC4	8-749-939-91	BX3991: SONY
IC5	8-749-939-92	BX3992: SONY
IC6	8-749-939-91	BX3991: SONY
IC7	8-749-939-92	BX3992: SONY
L1	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L1	1-407-161-XX	MICRO 22 (PAL)
L2	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L2	1-407-161-XX	MICRO 22 (PAL)
L3	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L3	1-407-161-XX	MICRO 22 (PAL)
L4	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L4	1-407-161-XX	MICRO 22 (PAL)
L5	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L5	1-407-161-XX	MICRO 22 (PAL)
L6	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L6	1-407-161-XX	MICRO 22 (PAL)
Q1	8-729-117-54	2SA1175
Q2	8-729-606-32	2SC2603
Q3	8-729-117-54	2SA1175
Q4	8-729-117-54	2SA1175
Q5	8-729-117-54	2SA1175

Ref. No.	Parts No.	Description
Q6	8-729-117-54	2SA1175
Q7	8-729-117-54	2SA1175
Q8	8-729-606-32	2SC2603
Q9	8-729-606-32	2SC2603
Q10	8-729-117-54	2SA1175
Q11	8-729-606-32	2SC2603
Q12	8-729-606-32	2SC2603
Q13	8-729-117-54	2SA1175
Q14	8-729-117-54	2SA1175
Q15	8-729-117-54	2SA1175
Q16	8-729-117-54	2SA1175
Q17	8-729-117-54	2SA1175
Q18	8-729-606-32	2SC2603
Q19	8-729-625-91	2SC2259
Q20	8-729-606-32	2SC2603
Q21	8-729-606-32	2SC2603
Q22	8-729-606-32	2SC2603
Q23	8-729-117-54	2SA1175
Q24	8-729-606-32	2SC2603
Q25	8-729-606-32	2SC2603
Q26	8-729-606-32	2SC2603
RV1	1-226-771-00	METAL 1K
RV2	1-226-701-00	METAL 220
RV3	1-226-702-00	METAL 2.2K
RV4	1-226-702-00	METAL 2.2K
RV5	1-226-771-00	METAL 1K
RV6	1-226-701-00	METAL 220
RV7	1-226-771-00	METAL 1K
RV8	1-226-771-00	METAL 1K
RV9	1-226-701-00	METAL 220
RV10	1-226-771-00	METAL 1K
RV11	1-226-702-00	METAL 2.2K
TH1	1-800-071-XX	DIRECT-HEATING DISK 300Ω
TH2	1-800-071-XX	DIRECT-HEATING DISK 300Ω

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EF-10 BOARD

Ref. No.	Parts No.	Description
	A-7511-732-A	MOUNTED CIRCUIT BOARD "EF-10" (NTSC, PAL-M)
	A-7511-733-A	MOUNTED CIRCUIT BOARD "EF-10" (PAL)
	1-560-427-00	RECEPTACLE, 45P MALE
C3	1-123-617-00	ELECT 10 20% 16V
C4	1-123-617-00	ELECT 10 20% 16V
C6	1-123-617-00	ELECT 10 20% 16V
C13	1-123-617-00	ELECT 10 20% 16V
C14	1-123-617-00	ELECT 10 20% 16V
C16	1-123-617-00	ELECT 10 20% 16V
C20	1-107-210-00	MICA 22PF 5% 500V
C23	1-123-617-00	ELECT 10 20% 16V
C24	1-107-210-00	MICA 22PF 5% 500V
C25	1-107-157-00	MICA 27PF 5% 500V (NTSC, PAL-M)
C25	1-107-208-00	MICA 18PF 5% 500V (PAL)
C26	1-161-013-00	CERAMIC 0.01 10% 25V
C29	1-123-617-00	ELECT 10 20% 16V
C30	1-123-617-00	ELECT 10 20% 16V
C36	1-123-617-00	ELECT 10 20% 16V
C37	1-102-110-00	CERAMIC 220PF 10% 50V
C41	1-161-021-00	CERAMIC 0.047 10% 25V
C42	1-123-617-00	ELECT 10 20% 16V
C43	1-123-617-00	ELECT 10 20% 16V
C44	1-161-013-00	CERAMIC 0.01 10% 25V
C45	1-161-013-00	CERAMIC 0.01 10% 25V
C46	1-107-211-00	MICA 24PF 5% 500V
CV1	1-141-084-XX	CERAMIC 55PF
CV2	1-141-084-XX	CERAMIC 55PF
CV3	1-141-084-XX	CERAMIC 55PF
CV4	1-141-084-XX	CERAMIC 55PF
CV5	1-141-084-XX	CERAMIC 55PF
D1	8-719-815-55	1S1555
D2	8-719-815-55	1S1555
IC1	8-749-939-91	BX3991: SONY
IC2	8-749-939-90	BX3990: SONY
IC3	8-749-939-91	BX3991: SONY
IC4	8-749-939-90	BX3990: SONY

Ref. No.	Parts No.	Description
L1	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L1	1-407-161-XX	MICRO 22 (PAL)
L2	1-407-165-XX	MICRO 47 (NTSC, PAL-M)
L2	1-407-161-XX	MICRO 22 (PAL)
L3	1-407-162-XX	MICRO 27 (NTSC, PAL-M)
L3	1-407-160-XX	MICRO 18 (PAL)
L4	1-407-168-XX	MICRO 82
L5	1-407-164-XX	MICRO 39 (NTSC, PAL-M)
L5	1-407-161-XX	MICRO 22 (PAL)
Q1	8-729-606-32	2SC2603
Q2	8-729-606-32	2SC2603
Q3	8-765-020-00	2SA884
Q4	8-729-606-32	2SC2603
Q5	8-729-117-54	2SA1175
Q6	8-729-606-32	2SC2603
Q7	8-729-606-32	2SC2603
Q8	8-765-020-00	2SA884
Q9	8-729-117-54	2SA1175
Q10	8-729-606-32	2SC2603
Q11	8-729-606-32	2SC2603
Q12	8-729-606-32	2SC2603
Q13	8-729-117-54	2SA1175
Q14	8-729-697-92	2SA979
Q15	8-729-606-32	2SC2603
Q16	8-723-304-00	2SK43-4
Q17	8-729-117-54	2SA1175
Q18	8-729-117-54	2SA1175
Q19	8-729-117-54	2SA1175
Q20	8-729-606-32	2SC2603
Q21	8-729-606-32	2SC2603
Q22	8-729-606-32	2SC2603
Q23	8-729-606-32	2SC2603
Q24	8-729-117-54	2SA1175
Q25	8-729-697-92	2SA979
Q26	8-729-606-32	2SC2603
Q27	8-729-625-91	2SC2259
Q28	8-729-117-54	2SA1175
Q29	8-729-606-32	2SC2603
RV1	1-226-771-00	METAL 1K
RV2	1-226-771-00	METAL 1K
RV3	1-226-701-00	METAL 220
RV4	1-226-770-00	METAL 470
RV5	1-226-771-00	METAL 1K

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Ref. No.	Parts No.	Description
RV6	**1-226-771-00**	**METAL 1K**
RV7	**1-226-701-00**	**METAL 220**
RV8	**1-226-771-00**	**METAL 1K**
RV9	**1-226-776-00**	**METAL 220K**
RV10	**1-226-772-00**	**METAL 4.7K**
RV11	**1-226-702-00**	**METAL 2.2K**
RV12	**1-226-773-00**	**METAL 22K**

HN-22 BOARD

	A-7511-831-A	MOUNTED CIRCUIT BOARD "HN-22"
	1-560-674-00	RECEPTACLE, 50P
	1-561-776-00	50P SOCKET
C1	**1-123-324-00**	**ELECT 1000 20% 16V**
CN1	1-560-428-00	RECEPTACLE, 45P FEMALE
CN2	1-560-428-00	RECEPTACLE, 45P FEMALE
CN3	1-560-428-00	RECEPTACLE, 45P FEMALE
CN4	1-560-428-00	RECEPTACLE, 45P FEMALE
CN5	1-560-428-00	RECEPTACLE, 45P FEMALE
CN6	1-560-428-00	RECEPTACLE, 45P FEMALE
CN7	1-560-428-00	RECEPTACLE, 45P FEMALE
CN8	1-560-428-00	RECEPTACLE, 45P FEMALE
CN9	1-556-026-00	RECEPTACLE, WIRE FLAT TYPE
CN10	1-556-026-00	RECEPTACLE, WIRE FLAT TYPE
CN17	**1-560-809-00**	**RECEPTACLE, 5P MALE**
CN18	**1-560-809-00**	**RECEPTACLE, 5P MALE**
R1 ~ R7	**1-247-104-00**	**CARBON 75 5% 1/4W**

Ref. No.	Parts No.	Description
S1	**1-516-576-00**	**SLIDE**
S2	**1-516-576-00**	**SLIDE**
S3	**1-516-576-00**	**SLIDE**
S4	**1-516-576-00**	**SLIDE**
S5	**1-516-576-00**	**SLIDE**
S6	**1-516-576-00**	**SLIDE**
S7	**1-516-576-00**	**SLIDE**
S8	**1-516-576-00**	**SLIDE**

JK-7 BOARD

	1-610-337-00	PRINTED CIRCUIT BOARD "JK-7"
J1	**1-507-883-00**	**SMALL TYPE 4P**
VDR1	**1-806-504-00**	**ERZ-C05DK820**

HN-28 BOARD

	1-610-339-00	PRINTED CIRCUIT BOARD "HN-28"
C1	**1-123-622-00**	**ELECT 22 20% 16V**
D1	**8-719-100-44**	**RD7.5EB2 (PAL, PAL-M)**
VDR1	**1-806-504-00**	**ERZ-C05DK820**

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KY-17

Ref. No.	Parts No.	Description
KY-17 BOARD		
	A-7511-750-A	MOUNTED CIRCUIT BOARD "KY-17"
C2	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
D1~D45	**8-719-815-55**	**1S1555**
IC1	**8-759-245-55**	**TC4555BP: TOSHIBA**
IC2	**8-759-240-28**	**TC4028BP: TOSHIBA**
IC3	**8-759-262-15**	**TD62105P: TOSHIBA**
IC4	**8-759-262-15**	**TD62105P: TOSHIBA**
IC5	**8-759-262-15**	**TD62105P: TOSHIBA**
IC6	**8-759-262-15**	**TD62105P: TOSHIBA**
IC7	**8-759-262-15**	**TD62105P: TOSHIBA**
IC8	**8-759-262-15**	**TD62105P: TOSHIBA**
IC9	**8-759-262-15**	**TD62105P: TOSHIBA**
PL1~PL13	**1-518-361-00**	**12V, 40mA "PGM INDICATORS"**

Ref. No.	Parts No.	Description
S1~S23	**1-553-939-71**	**PUSH for "BUS"**
	1-518-480-00	**LAMP, 12V, 30mA**
S24	**1-553-939-71**	**PUSH "EFFECTS SELECT-MIX"**
	1-518-480-00	**LAMP, 12V, 30mA**
S25	**1-553-939-71**	**PUSH "EFFECTS SELECT-WIPE"**
	1-518-480-00	**LAMP, 12V, 30mA**
S26	**1-553-939-71**	**PUSH "EFFECTS SELECT-EXT KEY"**
	1-518-480-00	**LAMP, 12V, 30mA**
S27	**1-553-939-21**	**PUSH "WIPE ▗ "**
	1-518-480-00	**LAMP, 12V, 30mA**
S28	**1-553-939-31**	**PUSH "WIPE ▖ "**
	1-518-480-00	**LAMP, 12V, 30mA**
S29	**1-554-074-11**	**PUSH "WIPE ▌ "**
	1-518-480-00	**LAMP, 12V, 30mA**
S30	**1-553-939-11**	**PUSH "WIPE ▝ "**
	1-518-480-00	**LAMP, 12V, 30mA**
S31	**1-553-939-41**	**PUSH "WIPE ▘ "**
	1-518-480-00	**LAMP, 12V, 30mA**
S32	**1-553-939-61**	**PUSH "WIPE ▄ "**
	1-518-480-00	**LAMP, 12V, 30mA**
S33	**1-553-551-51**	**PUSH "TAKE"**
	1-518-480-00	**LAMP, 12V, 30mA**
S34	**1-553-939-71**	**PUSH "DSK PST CUT IN/OUT"**
	1-518-480-00	**LAMP, 12V, 30mA**
S35	**1-553-939-81**	**PUSH "DSK PGM CUT IN/OUT"**
	1-518-480-00	**LAMP, 12V, 30mA**
S36	**1-516-995-00**	**SLIDE "A BUS BLACK/COLOR/ WHITE"**
S37	**1-516-995-00**	**SLIDE "B BUS BLACK/COLOR/ WHITE"**
S38	**1-516-995-00**	**SLIDE "PST BLACK/COLOR/ WHITE"**
S39	**1-516-961-21**	**SLIDE "PGM/PST"**
S40	**1-516-995-00**	**SLIDE "BORDER/HARD/SOFT"**
S41	**1-516-961-21**	**SLIDE "NORMAL/INVERT"**
S42	**1-516-995-00**	**SLIDE "NARROW/OFF/WIDE"**
S43	**1-516-961-21**	**SLIDE "PHASE INDICATOR"**

NOTE:

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Ref. No.	Parts No.	Description
KY-42 BOARD		
	A-7511-987-A	MOUNTED CIRCUIT BOARD "KY-42"
C2	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C4	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C5	**1-107-210-00**	**MICA 22PF 5% 500V**
C6	**1-107-210-00**	**MICA 22PF 5% 500V**
C7	**1-102-116-00**	**CERAMIC 680PF 10% 50V**
C8	**1-123-617-00**	**ELECT 10 20% 16V**
C9	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C12	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C19	**1-123-611-00**	**ELECT 1 20% 50V**
C20	**1-123-647-00**	**ELECT 47 20% 6.3V**
C21	**1-123-647-00**	**ELECT 47 20% 6.3V**
C22	**1-123-661-00**	**ELECT 100 20% 6.3V**
C23	**1-124-142-00**	**ELECT 470 20% 10V**
C24	**1-123-661-00**	**ELECT 100 20% 6.3V**
C52	**1-131-381-00**	**TANTALUM 47 10% 10V**
C53	**1-102-117-00**	**CERAMIC 820PF 10% 50V**
C54	**1-161-007-00**	**CERAMIC 0.0033 10% 25V**
CN501	1-560-675-00	RECEPTACLE, 50P MALE
CN502	1-560-675-00	RECEPTACLE, 50P MALE
D1	**8-719-815-55**	**1S1555**
D2	**8-719-156-07**	**RD5.6EB**
D3	**8-719-191-07**	**RD9.1EB**
D4	**8-719-815-55**	**1S1555**
D5	**8-719-815-55**	**1S1555**
D6	**8-719-815-55**	**1S1555**
D7	**8-719-815-55**	**1S1555**
D8	**8-719-815-55**	**1S1555**
D9	**8-719-815-55**	**1S1555**
D11	**8-719-815-55**	**1S1555**
D12	**8-719-815-55**	**1S1555**
D13	**8-719-815-55**	**1S1555**
D14	**8-719-815-55**	**1S1555**
D15	**8-719-815-55**	**1S1555**
D16	**8-719-815-55**	**1S1555**
D17	**8-719-815-55**	**1S1555**
D18	**8-719-815-55**	**1S1555**
D19	**8-719-815-55**	**1S1555**
D20	**8-719-815-55**	**1S1555**
D21	**8-719-100-57**	**RD10EB2**

Ref. No.	Parts No.	Description
D22	**8-719-100-38**	**RD6.2EB2**
D23	**8-719-815-55**	**1S1555**
D24	**8-719-191-07**	**RD9.1EB**
D25	**8-719-156-07**	**RD5.6EB**
D26	**8-719-815-55**	**1S1555**
D27	**8-719-100-38**	**RD6.2EB2**
D28	**8-719-100-38**	**RD6.2EB2**
D29	**8-719-100-38**	**RD6.2EB2**
D30	**8-719-100-38**	**RD6.2EB2**
D31	**8-719-100-38**	**RD6.2EB2**
D32	**8-719-100-38**	**RD6.2EB2**
D33	**8-719-100-38**	**RD6.2EB2**
D34	**8-719-143-07**	**RD4.3EB**
D35	**8-719-815-55**	**1S1555**
D36	**8-719-815-55**	**1S1555**
D37	**8-719-815-55**	**1S1555**
IC1	**8-759-758-71**	**μPD8748D-200012: NEC**
IC2	**8-759-250-20**	**TC5020: TOSHIBA**
IC3	**8-759-250-20**	**TC5020: TOSHIBA**
IC4	**8-759-250-20**	**TC5020: TOSHIBA**
IC5	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC6	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC7	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC8	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC9	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC10	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC11	**8-759-262-15**	**TD62105P: TOSHIBA**
IC12	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC13	**8-759-045-08**	**MC14508BCP: MOTOROLA**
IC14	**8-759-240-28**	**TC4028BP: TOSHIBA**
IC15	**8-759-240-28**	**TC4028BP: TOSHIBA**
IC16	**8-759-240-28**	**TC4028BP: TOSHIBA**
IC17	**8-759-240-28**	**TC4028BP: TOSHIBA**
IC18	**8-759-240-47**	**TC4047BP: TOSHIBA**
IC19	**8-759-240-81**	**TC4081BP: TOSHIBA**
IC20	**8-759-240-50**	**TC4050BP: TOSHIBA**
IC21	**8-759-240-50**	**TC4050BP: TOSHIBA**
IC22	**8-759-240-52**	**TC4052BP: TOSHIBA**
IC23	**8-759-240-53**	**TC4053BP: TOSHIBA**
IC24	**8-759-240-53**	**TC4053BP: TOSHIBA**
IC25	**8-759-240-01**	**TC4001BP: TOSHIBA**
IC26	**8-759-990-62**	**TL062CP: TI**

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Ref. No.	Parts No.	Description
Q1	8-729-177-43	2SD774
Q2	8-729-606-32	2SC2603
Q3	8-729-606-32	2SC2603
Q4	8-729-606-32	2SC2603
Q5	8-729-177-43	2SD774
Q6	8-729-177-43	2SD774
Q7	8-729-606-32	2SC2603
Q8	8-729-606-32	2SC2603
Q9	8-729-606-32	2SC2603
Q10	8-729-606-32	2SC2603
Q11	8-729-606-32	2SC2603
Q12	8-729-606-32	2SC2603
Q13	8-729-606-32	2SC2603
Q14	8-729-606-32	2SC2603
Q15	8-729-177-43	2SD774
Q16	8-729-606-32	2SC2603
Q17	8-729-117-54	2SA1175
Q19	8-729-117-54	2SA1175
Q20	8-729-117-54	2SA1175
Q21	8-729-117-54	2SA1175
Q22	8-729-117-54	2SA1175
R33	1-247-127-00	CARBON 680 5% 1/4W
R72	1-246-475-00	CARBON 1.2K 5% 1/4W
R73	1-247-111-00	CARBON 150 5% 1/4W
R101	1-207-633-00	WIRE 56 10% 3W
RV1	1-224-249-XX	METAL 1K
RV2	1-228-443-00	SLIDE 5K/5K
RV3	1-228-443-00	SLIDE 5K/5K
RY1	1-515-434-00	MICRO LEAD 5V 300Ω
RY2	1-515-434-00	MICRO LEAD 5V 300Ω
RY3	1-515-434-00	MICRO LEAD 5V 300Ω
RY4	1-515-434-00	MICRO LEAD 5V 300Ω
S1	1-552-665-00	MICRO
S2	1-552-665-00	MICRO
S3	1-552-665-00	MICRO
S4	1-552-665-00	MICRO
T1	1-427-487-00	OUTPUT
X1	1-527-812-00	6MHz

Ref. No.	Parts No.	Description
LP-12 BOARD		
	1-606-081-00	PRINTED CIRCUIT BOARD "LP-12"
D1	8-719-802-08	TLR208
D2	8-719-802-08	TLR208
M1	1-520-427-00	LEVEL
M2	1-520-427-00	LEVEL
PS-24 BOARD		
	1-610-341-00	PRINTED CIRCUIT BOARD "PS-24"
C1	1-123-611-00	ELECT 1 20% 50V
D1	8-719-100-27	RD4.7EB2
D2	8-719-815-55	1S1555
IC1	8-759-729-03	NJM2903D: JRC
PH1	8-719-907-13	PC713
Q1	8-729-606-32	2SC2603

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PS-25 BOARD

Ref. No.	Parts No.	Description
	A-7511-981-A	MOUNTED CIRCUIT BOARD "PS-25" (NTSC)
	A-7511-983-A	MOUNTED CIRCUIT BOARD "PS-25" (PAL, PAL-M)
	1-517-072-00	**HOLDER, FUSE (NTSC)**
	1-533-131-00	**HOLDER, FUSE (PAL, PAL-M)**
C1	**1-123-617-00**	**ELECT 10 20% 16V**
C2	**1-123-613-00**	**ELECT 3.3 20% 50V**
C3	**1-123-821-00**	**ELECT 47 20% 16V**
C4	**1-123-617-00**	**ELECT 10 20% 16V**
C5	**1-124-284-00**	**ELECT (NONPOLAR) 10 20% 16V**
C6	**1-123-617-00**	**ELECT 10 20% 16V**
C7	**1-123-613-00**	**ELECT 3.3 20% 50V**
C8	**1-123-821-00**	**ELECT 47 20% 16V**
C9	**1-123-617-00**	**ELECT 10 20% 16V**
C10	**1-124-284-00**	**ELECT (NONPOLAR) 10 20% 16V**
C13	**1-123-622-00**	**ELECT 22 20% 16V**
C14	**1-123-821-00**	**ELECT 47 20% 16V**
C17	**1-123-611-00**	**ELECT 1 20% 50V**
CN1	1-508-902-00	RECEPTACLE, 4P MALE
	1-509-985-00	PLUG HOUSING 4P
	1-509-982-00	PLUG CONTACT
CN3	**1-508-900-00**	**RECEPTACLE, 2P MALE**
	1-509-983-00	PLUG HOUSING 2P
	1-509-982-00	PLUG CONTACT
CN4	**1-508-900-00**	**RECEPTACLE, 2P MALE**
	1-509-983-00	PLUG HOUSING 2P
	1-509-982-00	PLUG CONTACT
CN5	1-508-934-00	RECEPTACLE, 3P MALE
	1-509-984-00	PLUG HOUSING 3P
	1-509-982-00	PLUG CONTACT
CN6	1-508-934-00	RECEPTACLE, 3P MALE
	1-509-984-00	PLUG HOUSING 3P
	1-509-982-00	PLUG CONTACT
D1	**8-719-815-55**	**1S1555**
D2	**8-719-815-55**	**1S1555**
D3	**8-719-151-07**	**RD5.1EB**
D4	**8-719-815-55**	**1S1555**
D5	**8-719-815-55**	**1S1555**

Ref. No.	Parts No.	Description
D6	**8-719-200-02**	**10E2**
D7	**8-719-100-58**	**RD10EB3**
D8	**8-719-815-55**	**1S1555**
D9	**8-719-815-55**	**1S1555**
D10	**8-719-815-55**	**1S1555**
D11	**8-719-151-07**	**RD5.1EB**
D12	**8-719-815-55**	**1S1555**
D13	**8-719-815-55**	**1S1555**
D14	**8-719-200-02**	**10E2**
D15	**8-719-100-58**	**RD10EB3**
D16	**8-719-815-55**	**1S1555**
D17	**8-719-100-27**	**RD4.7EB2**
D18	**8-719-815-55**	**1S1555**
D19	**8-719-100-38**	**RD6.2EB2**
⚠F1	**1-532-349-XX**	**4A 125V (U/C)**
⚠F1	**1-532-350-00**	**TIME-LAG 4A (PAL, PAL-M)**
IC1	**8-759-729-03**	**NJM2903D: JRC**
IC2	**8-759-240-11**	**TC4011BP: TOSHIBA**
IC3	**8-759-729-03**	**NJM2903D: JRC**
IC4	**8-759-240-11**	**TC4011BP: TOSHIBA**
IC5	**8-759-729-03**	**NJM2903D: JRC**
Q1	**8-729-606-32**	**2SC2603**
Q2	**8-729-117-54**	**2SA1175**
Q3	**8-729-606-32**	**2SC2603**
Q4	**8-729-117-54**	**2SA1175**
Q5	**8-729-606-32**	**2SC2603**
Q6	**8-729-606-32**	**2SC2603**
Q7	**8-729-606-32**	**2SC2603**
Q8	**8-729-606-32**	**2SC2603**
R43	**1-247-143-00**	**CARBON 3.3K 5% 1/4W**
R54	**1-247-143-00**	**CARBON 3.3K 5% 1/4W**
R55	**1-202-850-00**	**SOLID 2.2 1/4W**
RV1	**1-226-773-00**	**METAL 22K**
RV2	**1-226-703-00**	**METAL 10K**
RV3	**1-226-773-00**	**METAL 22K**
RV4	**1-226-703-00**	**METAL 10K**
RY1	**1-515-355-00**	**12V, 720Ω**
RY2	**1-515-355-00**	**12V, 720Ω**

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PS-36

Ref. No.	Parts No.	Description
PS-36 BOARD		
	1-413-086-22	SWITCHING RGULATOR
C14	**1-123-955-00**	**ELECT 680 20% 16V**
C16	**1-123-049-00**	**ELECT(NONPOLAR) 0.47 20% 50V**
C20	**1-123-955-00**	**ELECT 680 20% 16V**
C21	**1-102-038-00**	**CERAMIC 0.001 99% 500V**
C22	**1-102-038-00**	**CERAMIC 0.001 99% 500V**
C24	**1-131-355-00**	**TANTALUM 2.2 10% 25V**
C26	**1-123-617-00**	**ELECT 10 20% 16V**
D1	**8-719-815-80**	**1S1587**
D2	**8-719-815-80**	**1S1587**
D3	**8-719-815-80**	**1S1587**
D4	**1-806-326-11**	**EU-2**
D5	**1-806-326-11**	**EU-2**
D6	**8-719-302-00**	**RU-2M**
D7	**8-719-302-00**	**RU-2M**
D8	**8-719-912-52**	**ESAC25-02C**
D9	**8-719-302-00**	**RU-2M**
D10	**8-719-302-00**	**RU-2M**
D11	**8-719-151-07**	**RD5.1EB**
D12	**8-719-100-38**	**RD6.2EB2**
D13	**8-719-100-07**	**RD30EB**
D14	**8-719-100-38**	**RD6.2EB2**
D15	**8-719-156-07**	**RD5.6EB**
D16	**8-719-815-80**	**1S1587**
D17	**8-719-815-80**	**1S1587**
IC1	**8-759-729-03**	**NJM2903D: JRC**
IC2	**8-759-937-59**	**MB3759: FUJITSU**
IC3	**1-806-327-11**	**μA78MG: FSC**
IC4	**8-759-907-91**	**μA79MG: FSC**
IC5	**8-759-729-03**	**NJM2903D: JRC**
L1	**1-421-495-00**	**CHOKE 2mH**
L2	**1-421-491-00**	**CHOKE 15**
L3	**1-421-491-00**	**CHOKE 15**
L4	**1-407-492-00**	**MICRO 1mH**
L5	**1-407-492-00**	**MICRO 1mH**

Ref. No.	Parts No.	Description
L6	**1-421-492-00**	**CHOKE 1.2mH**
L7	**1-421-493-00**	**CHOKE 2mH**
L8	**1-421-493-00**	**CHOKE 2mH**
L9	**1-421-494-00**	**CHOKE 800**
L10	**1-421-462-00**	**CHOKE 10**
L11	**1-421-461-00**	**CHOKE 10**
PH1	**8-719-902-56**	**DIODE PC817**
Q1	**8-729-663-47**	**2SC1364**
Q2	**8-729-331-53**	**2SC2315**
Q3	**8-729-663-47**	**2SC1364**
Q4	**8-729-133-40**	**2SC2334**
Q5	**8-729-133-40**	**2SC2334**
Q6	**8-729-663-47**	**2SC1364**
Q7	**8-729-663-47**	**2SC1364**
Q8	**1-806-219-11**	**2SA1012-Y**
Q9	**8-729-117-54**	**2SA1175**
Q10	**8-729-606-32**	**2SC2603**
R1	**1-212-372-00**	**METAL OXIDE 10 1W**
R2	**1-246-481-00**	**CARBON 2.2K 1/4W**
R3	**1-246-497-00**	**CARBON 10K 1/4W**
R4	**1-246-503-00**	**CARBON 18K 1/4W**
R5	**1-246-483-00**	**CARBON 2.7K 1/4W**
R6	**1-246-483-00**	**CARBON 2.7K 1/4W**
R7	**1-246-502-00**	**CARBON 16K 1/4W**
R8	**1-246-497-00**	**CARBON 10K 1/4W**
R9	**1-246-481-00**	**CARBON 2.2K 1/4W**
R10	**1-246-497-00**	**CARBON 10K 1/4W**
R12	**1-246-497-00**	**CARBON 10K 1/4W**
R13	**1-246-497-00**	**CARBON 10K 1/4W**
R14	**1-246-521-00**	**CARBON 100K 1/4W**
R15	**1-246-449-00**	**CARBON 100 1/4W**
R16	**1-246-449-00**	**CARBON 100 1/4W**
R17	**1-215-245-00**	**METAL OXIDE 24 1W**
R18	**1-215-245-00**	**METAL OXIDE 24 1W**
R19	**1-246-497-00**	**CARBON 10K 1/4W**
R20	**1-246-497-00**	**CARBON 10K 1/4W**
R21	**1-206-664-00**	**METAL OXIDE 1K 2W**
R22	**1-246-481-00**	**CARBON 2.2K 1/4W**
R23	**1-246-479-00**	**CARBON 1.8K 1/4W**
R24	**1-246-489-00**	**CARBON 4.7K 1/4W**
R25	**1-246-496-00**	**CARBON 9.1K 1/4W**

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R26	**1-246-483-00**	**CARBON 2.7K 1/4W**
R27	**1-246-485-00**	**CARBON 3.3K 1/4W**
R28	**1-246-491-00**	**CARBON 5.6K 1/4W**
R29	**1-246-483-00**	**CARBON 2.7K 1/4W**
R30	**1-246-481-00**	**CARBON 2.2K 1/4W**
R31	**1-246-481-00**	**CARBON 2.2K 1/4W**
R32	**1-246-513-00**	**CARBON 4.7K 1/4W**
R33	**1-246-497-00**	**CARBON 10K 1/4W**
R34	**1-246-483-00**	**CARBON 2.7K 1/4W**
R35	**1-246-473-00**	**CARBON 1K 1/4W**
R36	**1-246-449-00**	**CARBON 100 1/4W**
R37	**1-246-449-00**	**CARBON 100 1/4W**
R38	**1-206-640-00**	**METAL OXIDE 100 2W**
R39	**1-244-873-00**	**CARBON 1K 5% 1/2W**
R40	**1-246-485-00**	**CARBON 3.3K 5% 1/4W**
R41	**1-246-489-00**	**CARBON 4.7K 1/4W**
R42	**1-246-491-00**	**CARBON 5.6K 5% 1/4W**
R43	**1-246-483-00**	**CARBON 2.7K 5% 1/4W**
R44	**1-246-481-00**	**CARBON 2.2K 5% 1/4W**
R45	**1-246-497-00**	**CARBON 10K 1/4W**
R46	**1-246-481-00**	**CARBON 2.2K 5% 1/4W**
R47	**1-246-483-00**	**CARBON 2.7K 5% 1/4W**
R48	**1-246-518-00**	**CARBON 75K 5% 1/4W**
R49	**1-246-497-00**	**CARBON 10K 5% 1/4W**
R50	**1-246-505-00**	**CARBON 22K 5% 1/4W**
R51	**1-246-505-00**	**CARBON 22K 5% 1/4W**
R52	**1-246-497-00**	**CARBON 10K 5% 1/4W**
RY1	**1-515-441-00**	**6V, 100Ω**
T1	**1-447-194-00**	**CONVERTER**
VDR1	**1-806-504-00**	**ERZ-C05DK820 82V**
VR1	**1-226-771-00**	**METAL 1K**
VR2	**1-226-771-00**	**METAL 1K**
VR3	**1-226-771-00**	**METAL 1K**
VR4	**1-226-771-00**	**METAL 1K**

SD-2 BOARD

Ref. No.	Parts No.	Description
	A-7615-092-A	ADJUSTED CIRCUIT BOARD "SD-2" (NTSC, PAL-M)
	A-7615-093-A	ADJUSTED CIRCUIT BOARD "SD-2" (PAL)
	1-560-427-00	RECEPTACLE, 45P MALE
C9	**1-123-617-00**	**ELECT 10 20% 16V**
C10	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C15	**1-123-607-00**	**ELECT 0.1 20% 50V**
C16	**1-123-617-00**	**ELECT 10 20% 16V**
C17	**1-123-617-00**	**ELECT 10 20% 16V**
C18	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C22	**1-123-617-00**	**ELECT 10 20% 16V**
C23	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C31	**1-123-617-00**	**ELECT 10 20% 16V**
C33	**1-123-617-00**	**ELECT 10 20% 16V**
C34	**1-123-617-00**	**ELECT 10 20% 16V**
C41	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C43	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C45	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C47	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C49	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C50	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C51	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C52	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C54	**1-123-611-00**	**ELECT 1 20% 50V**
C55	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C56	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
D1	**8-719-815-55**	**1S1555**
D2	**8-719-815-55**	**1S1555**
D3	**8-719-815-55**	**1S1555**
D4	**8-719-100-23**	**RD4.3EB2**
D5	**8-719-100-23**	**RD4.3EB2**
IC1	**8-759-240-69**	**TC4069UBP: TOSHIBA**
IC2	**8-759-240-11**	**TC4011BP: TOSHIBA**
IC3	**8-759-240-49**	**TC4049BP: TOSHIBA**
IC4	**8-759-245-28**	**TC4528BP: TOSHIBA**
IC5	**8-759-245-28**	**TC4528BP: TOSHIBA**

NOTE:

1. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
IC6	8-759-245-28	TC4528BP: TOSHIBA
IC7	8-759-245-28	TC4528BP: TOSHIBA
IC8	8-759-245-28	TC4528BP: TOSHIBA
IC9	8-759-240-53	TC4053BP: TOSHIBA
IC10	8-759-240-53	TC4053BP: TOSHIBA
IC11	8-759-245-28	TC4528BP: TOSHIBA
IC12	8-759-245-28	TC4528BP: TOSHIBA
IC13	8-759-103-19	μPC319C: NEC
IC14	8-759-240-50	TC4050BP: TOSHIBA
IC15	8-759-900-04	SN74LS04N: TI
IC16	8-759-900-00	SN74LS00N: TI
IC17	8-759-900-10	SN74LS10N: TI
IC18	8-759-900-00	SN74LS00N: TI
IC19	8-759-900-04	SN74LS04N: TI
L1	1-407-164-XX	MICRO 39 (NTSC, PAL-M)
L1	1-407-161-XX	MICRO 22 (PAL)
Q1	8-729-606-32	2SC2603
Q2	8-729-117-54	2SA1175
Q3	8-729-606-32	2SC2603
Q4	8-729-606-32	2SC2603
Q5	8-729-117-54	2SA1175
Q6	8-729-606-32	2SC2603
Q7	8-729-606-32	2SC2603
Q8	8-729-606-32	2SC2603
Q9	8-729-117-54	2SA1175
Q10	8-729-117-54	2SA1175
Q11	8-729-606-32	2SC2603
Q12	8-729-606-32	2SC2603
Q13	8-729-117-54	2SA1175
Q14	8-729-606-32	2SC2603
Q15	8-729-113-32	2SB733
Q16	8-729-113-32	2SB733
Q17	8-729-606-32	2SC2603
Q18	8-729-606-32	2SC2603
Q19	8-729-117-54	2SA1175
Q20	8-729-606-32	2SC2603
Q21	8-729-606-32	2SC2603
Q22	8-729-117-54	2SA1175
Q23	8-729-606-32	2SC2603
Q24	8-729-606-32	2SC2603
Q25	8-729-117-54	2SA1175

Ref. No.	Parts No.	Description
Q26	8-729-117-54	2SA1175
Q27	8-729-117-54	2SA1175
Q28	8-729-606-32	2SC2603
Q29	8-729-606-32	2SC2603
Q30	8-729-117-54	2SA1175
Q31	8-729-117-54	2SA1175
Q32	8-729-117-54	2SA1175
RV1	1-226-772-00	METAL 4.7K
RV2	1-226-773-00	METAL 22K
RV3	1-226-773-00	METAL 22K
RV4	1-226-711-00	SOLID 22K
RV5	1-226-774-00	METAL 47K
RV6	1-226-702-00	METAL 2.2K
RV7	1-226-773-00	METAL 22K
RV8	1-226-711-00	SOLID 22K
RV9	1-226-772-00	METAL 4.7K
RV10	1-226-773-00	METAL 22K
RV11	1-226-772-00	METAL 4.7K
RV12	1-226-775-00	METAL 100K
RV13	1-226-774-00	METAL 47K
RV14	1-226-775-00	METAL 100K
RV15	1-226-776-00	METAL 220K
RV16	1-226-711-00	SOLID 22K
RV17	1-226-711-00	SOLID 22K
TH1	1-800-202-XX	S-10K

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SG-35 BOARD (NTSC)

Ref. No.	Parts No.	Description
	A-7511-518-A	MOUNTED CIRCUIT BOARD "SG-35"
C1	1-161-013-00	CERAMIC 0.01 10% 25V
C2	1-161-013-00	CERAMIC 0.01 10% 25V
C3	1-131-377-00	TANTALUM 10 10% 10V
C5	1-131-344-00	TANTALUM 0.33 10% 35V
C6	1-131-341-00	TANTALUM 0.1 10% 35V
C8	1-131-341-00	TANTALUM 0.1 10% 35V
C9	1-161-013-00	CERAMIC 0.01 10% 25V
C10	1-131-380-00	TANTALUM 33 10% 10V
C11	1-131-374-00	TANTALUM 33 10% 16V
C12	1-131-374-00	TANTALUM 33 10% 16V
C13	1-107-208-00	MICA 18PF 5% 500V
C14	1-161-013-00	CERAMIC 0.01 10% 25V
C15	1-131-377-00	TANTALUM 10 10% 10V
C17	1-161-013-00	CERAMIC 0.01 10% 25V
C18	1-131-377-00	TANTALUM 10 10% 10V
C20	1-131-377-00	TANTALUM 10 10% 10V
C21	1-131-380-00	TANTALUM 33 10% 10V
C22	1-161-013-00	CERAMIC 0.01 10% 25V
C24	1-131-347-00	TANTALUM 1 10% 35V
C26	1-161-013-00	CERAMIC 0.01 10% 25V
C27	1-161-013-00	CERAMIC 0.01 10% 25V
C28	1-131-380-00	TANTALUM 33 10% 10V
C30	1-161-013-00	CERAMIC 0.01 10% 25V
C31	1-161-039-00	CERAMIC 0.001 10% 25V
C33	1-161-013-00	CERAMIC 0.01 10% 25V
C34	1-131-341-00	TANTALUM 0.1 10% 35V
C35	1-131-370-00	TANTALUM 6.8 10% 16V
C36	1-131-377-00	TANTALUM 10 10% 10V
C37	1-161-013-00	CERAMIC 0.01 10% 25V
C38	1-107-208-00	MICA 18PF 5% 500V
C39	1-161-013-00	CERAMIC 0.01 10% 25V
C40	1-131-341-00	TANTALUM 0.1 10% 35V
C41	1-131-370-00	TANTALUM 6.8 10% 16V
C42	1-131-380-00	TANTALUM 33 10% 10V
C43	1-109-154-00	MICA 240PF 5% 300V
C44	1-108-227-00	MYLAR 0.001 10% 50V
C45	1-102-363-00	CERAMIC 0.001 50V
C46	1-102-242-00	CERAMIC 3PF ±0.5PF 50V
C47	1-102-363-00	CERAMIC 0.001 50V
C48	1-102-246-00	CERAMIC 47PF 10% 150V
C49	1-102-246-00	CERAMIC 47PF 10% 150V
C50	1-102-246-00	CERAMIC 47PF 10% 150V
C51	1-102-246-00	CERAMIC 47PF 10% 150V
C52	1-102-246-00	CERAMIC 47PF 10% 150V
C53	1-102-246-00	CERAMIC 47PF 10% 150V
C54	1-102-246-00	CERAMIC 47PF 10% 150V
C55	1-102-246-00	CERAMIC 47PF 10% 150V
C56	1-102-246-00	CERAMIC 47PF 10% 150V
C57	1-102-246-00	CERAMIC 47PF 10% 150V
C58	1-102-246-00	CERAMIC 47PF 10% 150V
C59	1-102-363-00	CERAMIC 0.001 50V
C60	1-131-369-00	TANTALUM 4.7 10% 16V
C61	1-107-177-00	MICA 220PF 5% 500V
C62	1-161-013-00	CERAMIC 0.01 10% 25V
C63	1-102-246-00	CERAMIC 47PF 10% 150V
D1	8-719-911-19	1SS119
D2	8-719-911-19	1SS119
IC1	8-759-131-11	μPC311C: NEC
IC2	8-759-901-07	SN74LS107AN: TI
IC3	8-759-902-21	SN74LS221N: TI
IC4	8-757-731-00	CX773A: SONY
IC5	8-759-990-82	TL082CP: TI
IC6	8-757-903-00	CX7903: SONY
IC7	8-759-901-23	SN74LS123N: TI
IC8	8-759-990-82	TL082CP: TI
IC9	8-759-240-53	TC4053BP: TOSHIBA
IC10	8-759-220-00	TC40H000P: TOSHIBA
IC11	8-759-902-21	SN74LS221N: TI
IC12	8-759-045-57	MC14557BCP: MOTOROLA
IC13	8-759-240-11	TC4011BP: TOSHIBA
L1	1-407-169-XX	MICRO 100
L2	1-407-169-XX	MICRO 100
L3	1-407-163-XX	MICRO 33
L4	1-407-164-XX	MICRO 39
L5	1-408-021-00	MICRO 150
L6	1-407-164-XX	MICRO 39
L7	1-407-164-XX	MICRO 39
L8	1-407-164-XX	MICRO 39
L9	1-407-164-XX	MICRO 39
L10	1-407-164-XX	MICRO 39

NOTE:

1. **The shaded and ⚠-marked components are critical to safety.**
   Replace only with same components as specified.

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
L11	**1-407-164-XX**	**MICRO 39**
L12	**1-407-164-XX**	**MICRO 39**
Q1	**8-729-603-50**	**2SC403SP**
Q2	**8-729-178-54**	**2SC2785**
Q3	**8-729-178-54**	**2SC2785**
Q4	**8-729-117-54**	**2SA1175**
Q5	**8-729-117-54**	**2SA1175**
Q6	**8-729-178-54**	**2SC2785**
Q7	**8-729-117-54**	**2SA1175**
Q8	**8-729-603-50**	**2SC403SP**
Q9	**8-729-603-50**	**2SC403SP**
Q10	**8-765-212-20**	**2SA925**
Q11	**8-765-212-20**	**2SA925**
Q12	**8-729-117-54**	**2SA1175**
Q13	**8-729-603-50**	**2SC403SP**
R72	**1-214-173-00**	**METAL 51K 1% 1/4W**
R82	**1-214-170-00**	**METAL 39K 1% 1/4W**
RV1	**1-226-772-00**	**METAL 4.7K**
RV2	**1-226-774-00**	**METAL 47K**
RV3	**1-226-774-00**	**METAL 47K**
RV4	**1-226-703-00**	**METAL 10K**
S1	**1-553-429-00**	**SLIDE**
VCO1	**1-527-478-00**	**14.31818MHz**

SG-34 BOARD

Ref. No.	Parts No.	Description
	A-7511-520-A	MOUNTED CIRCUIT BOARD "SG-34" (PAL)
	A-7511-652-A	MOUNTED CIRCUIT BOARD "SG-34" (PAL-M)
C1	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C2	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C3	**1-131-377-00**	**TANTALUM 10 10% 10V**
C5	**1-131-344-00**	**TANTALUM 0.33 10% 35V**
C6	**1-131-341-00**	**TANTALUM 0.1 10% 35V**
C8	**1-131-341-00**	**TANTALUM 0.1 10% 35V**
C9	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C10	**1-131-380-00**	**TANTALUM 33 10% 10V**
C11	**1-131-374-00**	**TANTALUM 33 10% 16V**
C12	**1-131-374-00**	**TANTALUM 33 10% 16V**
C14	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C15	**1-131-377-00**	**TANTALUM 10 10% 10V**
C17	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C18	**1-131-377-00**	**TANTALUM 10 10% 10V**
C19	**1-108-227-00**	**MYLAR 0.001 10% 50V**
C20	**1-131-377-00**	**TANTALUM 10 10% 10V**
C21	**1-131-380-00**	**TANTALUM 33 10% 10V**
C23	**1-131-347-00**	**TANTALUM 1 10% 35V**
C25	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C26	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C27	**1-131-380-00**	**TANTALUM 33 10% 10V**
C28	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C29	**1-131-380-00**	**TANTALUM 47 10% 10V**
C30	**1-131-369-00**	**TANTALUM 4.7 10% 16V**
C31	**1-131-380-00**	**TANTALUM 47 10% 10V**
C33	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C34	**1-161-039-00**	**CERAMIC 0.001 10% 25V**
C36	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C37	**1-131-341-00**	**TANTALUM 0.1 10% 35V**
C38	**1-131-370-00**	**TANTALUM 6.8 10% 16V**
C39	**1-131-377-00**	**TANTALUM 10 10% 10V**
C40	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C41	**1-107-208-00**	**MICA 18PF 5% 500V**
C42	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C43	**1-131-341-00**	**TANTALUM 0.1 10% 35V**
C44	**1-131-370-00**	**TANTALUM 6.8 10% 16V**
C45	**1-102-363-00**	**CERAMIC 0.001 50V**
C46	**1-102-242-00**	**CERAMIC 3PF ±0.5PF 50V**
C47	**1-102-363-00**	**CERAMIC 0.001 50V**
C48	**1-102-246-00**	**CERAMIC 47PF 10% 150V**

NOTE:

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Ref. No.	Parts No.	Description
C49	1-102-246-00	CERAMIC 47PF 10% 150V
C50	1-102-246-00	CERAMIC 47PF 10% 150V
C51	1-102-246-00	CERAMIC 47PF 10% 150V
C52	1-102-246-00	CERAMIC 47PF 10% 150V
C53	1-102-246-00	CERAMIC 47PF 10% 150V
C54	1-102-246-00	CERAMIC 47PF 10% 150V
C55	1-102-246-00	CERAMIC 47PF 10% 150V
C56	1-102-246-00	CERAMIC 47PF 10% 150V
C57	1-102-246-00	CERAMIC 47PF 10% 150V
C58	1-102-246-00	CERAMIC 47PF 10% 150V
C59	1-102-246-00	CERAMIC 47PF 10% 150V
C60	1-102-363-00	CERAMIC 0.001 50V
C61	1-161-013-00	CERAMIC 0.01 10% 25V
C62	1-131-369-00	TANTALUM 4.7 10% 16V
C64	1-161-013-00	CERAMIC 0.01 10% 25V
C65	1-102-246-00	CERAMIC 47PF 10% 150V
C66	1-107-157-00	MICA 27PF 5% 500V (PAL)
D1	8-719-911-19	1SS119
IC1	8-759-131-11	μPC311C: NEC
IC2	8-759-901-07	SN74LS107AN: TI
IC3	8-759-902-21	SN74LS221N: TI
IC4	8-757-731-00	CX773A: SONY
IC5	8-759-990-82	TL082CP: TI
IC6	8-757-903-00	CX7903: SONY
IC7	8-759-901-23	SN74LS123N: TI
IC8	8-759-990-82	TL082CP: TI
IC9	8-759-240-53	TC4053BP: TOSHIBA
IC10	8-759-240-11	TC4011BP: TOSHIBA
L1	1-407-169-XX	MICRO 100
L2	1-407-169-XX	MICRO 100
L3	1-407-163-XX	MICRO 33
L4	1-407-164-XX	MICRO 39
L5	1-408-355-00	MICRO 100
L6	1-407-164-XX	MICRO 39
L7	1-407-164-XX	MICRO 39
L8	1-407-164-XX	MICRO 39
L9	1-407-164-XX	MICRO 39
L10	1-407-164-XX	MICRO 39
L11	1-407-164-XX	MICRO 39
L12	1-407-163-XX	MICRO 33
L13	1-407-164-XX	MICRO 39
L14	1-408-356-00	MICRO 120 (PAL)

Ref. No.	Parts No.	Description
Q1	8-729-603-50	2SC403SP
Q2	8-729-178-54	2SC2785
Q3	8-729-178-54	2SC2785
Q4	8-729-117-54	2SA1175
Q5	8-729-117-54	2SA1175
Q6	8-729-178-54	2SC2785
Q7	8-729-117-54	2SA1175
Q8	8-729-603-50	2SC403SP
Q9	8-729-603-50	2SC403SP
Q10	8-765-212-20	2SA925
Q11	8-765-212-20	2SA925
Q12	8-729-117-54	2SA1175
Q13	8-723-304-00	2SK43-4
Q14	8-729-603-50	2SC403SP
R51	1-246-481-00	CARBON 2.2K 5% 1/4W
RV1	1-226-772-00	METAL 4.7K
RV2	1-226-703-00	METAL 10K
VCO1	1-527-585-00	17.734475MHz (PAL)
VCO1	1-527-798-00	14.3024MHz (PAL-M)
VCO2	1-527-729-00	14.1875MHz (PAL)
VCO2	1-527-478-00	14.31818MHz (PAL-M)

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WP ASSY, WP-11, WP-12

WP ASSY BOARD

Ref. No.	Parts No.	Description
	A-7615-131-A	ADJUSTED CIRCUIT BOARD (NTSC, PAL-M)
	A-7615-132-A	ADJUSTED CIRCUIT BOARD (PAL)

WP-11 BOARD

Ref. No.	Parts No.	Description
C1	**1-124-143-00**	**ELECT 100 20% 16V**
C3	**1-124-289-00**	**ELECT (NONPOLAR) 33 20% 10V**
C4	**1-123-611-00**	**ELECT 1 20% 50V**
C5	**1-123-821-00**	**ELECT 47 20% 16V**
Q1	**8-729-606-32**	**2SC2603**
Q2	**8-729-606-32**	**2SC2603**
Q3	**8-729-117-54**	**2SA1175**
Q4	**8-729-606-32**	**2SC2603**
Q5	**8-729-606-32**	**2SC2603**
Q6	**8-729-117-54**	**2SA1175**
Q7	**8-729-606-32**	**2SC2603**

WP-12 BOARD

Ref. No.	Parts No.	Description
C1	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C2	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C6	**1-123-617-00**	**ELECT 10 20% 16V**
C7	**1-123-617-00**	**ELECT 10 20% 16V**
C9	**1-123-617-00**	**ELECT 10 20% 16V**
C10	**1-123-617-00**	**ELECT 10 20% 16V**
C11	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C12	**1-123-617-00**	**ELECT 10 20% 16V**
C13	**1-123-617-00**	**ELECT 10 20% 16V**
C14	**1-123-617-00**	**ELECT 10 20% 16V**
C15	**1-123-617-00**	**ELECT 10 20% 16V**
C16	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C17	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C18	**1-131-361-00**	**TANTALUM 2.2 20% 20V**
C22	**1-123-608-00**	**ELECT 0.22 20% 50V**
C24	**1-123-617-00**	**ELECT 10 20% 16V**
C26	**1-123-617-00**	**ELECT 10 20% 16V**
C27	**1-123-617-00**	**ELECT 10 20% 16V**
C28	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C29	**1-123-617-00**	**ELECT 10 20% 16V**
C30	**1-123-617-00**	**ELECT 10 20% 16V**
C32	**1-123-607-00**	**ELECT 0.1 20% 50V**
C33	**1-123-617-00**	**ELECT 10 20% 16V**
C34	**1-123-617-00**	**ELECT 10 20% 16V**
C35	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C36	**1-123-617-00**	**ELECT 10 20% 16V**
C37	**1-123-617-00**	**ELECT 10 20% 16V**
C39	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C41	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C43	**1-161-013-00**	**CERAMIC 0.01 10% 25V**
C44	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C45	**1-102-106-00**	**CERAMIC 100PF 10% 50V**
C46	**1-102-114-00**	**CERAMIC 470PF 10% 50V**
C47	**1-102-114-00**	**CERAMIC 470PF 10% 50V**
C48	**1-102-114-00**	**CERAMIC 470PF 10% 50V**
C49	**1-102-114-00**	**CERAMIC 470PF 10% 50V**
C50	**1-161-039-00**	**CERAMIC 0.001 10% 25V**
C51	**1-161-039-00**	**CERAMIC 0.001 10% 25V**
CN1	1-560-427-00	RECEPTACLE, 45P MALE

NOTE:

1. **The shaded and ⚠-marked components are critical to safety. Replace only with same components as specified.**

2. Parts printed in **Bold-Face type** are normally stocked for replacement purposes. The remaining parts shown in this manual are not normally required for routine service work. Orders for parts not shown in Bold-Face type will be processed, but allow for additional delivery time.

Ref. No.	Parts No.	Description
D1	8-719-815-55	1S1555
D2	8-719-815-55	1S1555
D3	8-719-815-55	1S1555
D4	8-719-815-55	1S1555
D5	8-719-815-55	1S1555
D6	8-719-815-55	1S1555
D7	8-719-815-55	1S1555
D8	8-719-815-55	1S1555
D9	8-719-815-55	1S1555
D10	8-719-815-55	1S1555
D11	8-719-815-55	1S1555
D12	8-719-815-55	1S1555
D13	8-719-815-55	1S1555
D14	8-719-815-55	1S1555
D15	8-719-815-55	1S1555
D16	8-719-904-73	1S2473VE
IC1	8-759-240-51	TC4051BP: TOSHIBA
IC2	8-759-240-51	TC4051BP: TOSHIBA
IC3	8-759-240-51	TC4051BP: TOSHIBA
Q1	8-729-117-54	2SA1175
Q2	8-729-606-32	2SC2603
Q3	8-729-117-54	2SA1175
Q4	8-729-606-32	2SC2603
Q5	8-729-117-54	2SA1175
Q6	8-729-117-54	2SA1175
Q7	8-729-606-32	2SC2603
Q8	8-729-117-54	2SA1175
Q9	8-729-117-54	2SA1175
Q10	8-729-606-32	2SC2603
Q11	8-729-606-32	2SC2603
Q12	8-729-606-32	2SC2603
Q13	8-729-606-32	2SC2603
Q14	8-729-117-54	2SA1175
Q15	8-729-606-32	2SC2603
Q16	8-729-606-32	2SC2603
Q17	8-729-606-32	2SC2603
Q18	8-729-606-32	2SC2603
Q19	8-729-606-32	2SC2603
Q20	8-729-606-32	2SC2603
Q21	8-729-117-54	2SA1175
Q22	8-729-606-32	2SC2603
Q23	8-729-117-54	2SA1175
Q24	8-729-606-32	2SC2603
Q25	8-729-117-54	2SA1175

Ref. No.	Parts No.	Description
Q26	8-729-117-54	2SA1175
Q27	8-729-606-32	2SC2603
Q28	8-729-117-54	2SA1175
Q29	8-729-117-54	2SA1175
Q30	8-729-606-32	2SC2603
Q31	8-729-606-32	2SC2603
Q32	8-729-606-32	2SC2603
Q33	8-729-606-32	2SC2603
Q34	8-729-117-54	2SA1175
Q35	8-729-606-32	2SC2603
Q36	8-729-606-32	2SC2603
Q37	8-729-606-32	2SC2603
Q38	8-729-606-32	2SC2603
Q39	8-729-606-32	2SC2603
Q40	8-729-117-54	2SA1175
Q41	8-729-117-54	2SA1175
Q42	8-729-606-32	2SC2603
Q43	8-729-117-54	2SA1175
Q44	8-729-606-32	2SC2603
Q45	8-729-606-32	2SC2603
Q46	8-729-606-32	2SC2603
Q47	8-729-117-54	2SA1175
Q48	8-729-117-54	2SA1175
Q49	8-729-606-32	2SC2603
Q50	8-729-606-32	2SC2603
Q51	8-729-606-32	2SC2603
Q52	8-729-117-54	2SA1175
Q53	8-729-117-54	2SA1175
Q54	8-729-606-32	2SC2603
Q55	8-729-606-32	2SC2603
Q56	8-729-606-32	2SC2603
Q57	8-723-304-00	2SK43-4
Q58	8-723-304-00	2SK43-4
Q59	8-723-304-00	2SK43-4
Q60	8-723-304-00	2SK43-4
Q61	8-729-606-32	2SC2603
Q62	8-729-606-32	2SC2603
Q63	8-729-606-32	2SC2603
Q64	8-729-606-32	2SC2603
Q65	8-729-606-32	2SC2603
Q66	8-729-606-32	2SC2603
Q67	8-729-606-32	2SC2603
Q68	8-729-606-32	2SC2603
Q69	8-729-606-32	2SC2603
Q70	8-729-117-54	2SA1175

NOTE:

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WP-12, FRAME

Ref. No.	Parts No.	Description
Q71	8-729-606-32	2SC2603
Q72	8-729-117-54	2SA1175
Q73	8-729-117-54	2SA1175
Q74	8-729-606-32	2SC2603
RV1	1-226-702-00	METAL 2.2K
RV2	1-226-703-00	METAL 10K
RV3	1-226-772-00	METAL 4.7K
RV4	1-226-703-00	METAL 10K
RV5	1-226-772-00	METAL 4.7K
RV6	1-226-772-00	METAL 4.7K
RV7	1-226-772-00	METAL 4.7K
RV8	1-226-702-00	METAL 2.2K
RV9	1-226-703-00	METAL 10K
RV10	1-226-772-00	METAL 4.7K
RV11	1-226-703-00	METAL 10K
RV12	1-226-772-00	METAL 4.7K
RV13	1-226-703-00	METAL 10K
RV14	1-226-703-00	METAL 10K
RV15	1-226-772-00	METAL 4.7K
RV16	1-226-774-00	METAL 47K

Ref. No.	Parts No.	Description
FRAME		
CN001 ~ CN026	1-561-336-00	RECEPTACLE, BNC
CN027	1-509-422-00	RECEPTACLE, 6P FEMALE "B/W CAMERA"
CN028	1-526-531-00	RECEPTACLE, 4P FEMALE "EXT DC IN 10 ~ 24V"
CN029 ~ CN032	1-509-501-00	RECEPTACLE, 4P MALE "TALLY/INTERCOM"
⚠CN36	1-509-547-00	~AC IN
⚠CN38	1-526-572-00	VOLTAGE SELECTOR (PAL, PAL-M)
CN40	1-508-055-00	RECEPTACLE, 6P MALE "EXT WIPE IN"
J101	1-507-465-00	POWER OUTSIDE "BATT-1 IN"
J102	1-507-465-00	POWER OUTSIDE "BATT-2 IN"
RV001 ~ RV004	1-228-491-00	CARBON 5K
RV005	1-228-442-00	CARBON 5K/5K "SOFTNESS/BORDER"
RV006	1-228-492-00	CARBON 20K "INTERCOM LEVEL"
RV007	1-226-917-00	CARBON 10K "SC PHASE"
RV008	1-226-917-00	CARBON 10K "H PHASE"
⚠S1	1-554-359-11	ROTARY POWER (NTSC)
⚠S1	1-554-359-21	ROTARY POWER (PAL, PAL-M)
⚠T1	1-447-154-00	"POWER" WITH CONNECTOR AND FASTEN RECEPTACLE (NTSC)
⚠T1	1-447-155-00	"POWER" WITH CONNECTOR AND FASTEN RECEPTACLE (PAL, PAL-M)
	1-509-921-00	CONNECTOR
	⚠1-535-047-00	FASTEN RECEPTACLE

NOTE:

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   Replace only with same components as specified.

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Ref. No.	Parts No.	Description

12-4. PACKING MATERIAL AND ACCESSORIES (SUPPLIED)

Ref. No.	Parts No.	Description
	⚠ 1-551-812-00	**CORD, POWER (U/C)**
	⚠ 1-556-760-11	**CORD, POWER (PAL, PAL-M)**
	2-296-555-00	CARTON, INDIVIDUAL
	2-296-556-00	CUSHION, LOWER, LEFT
	2-296-557-00	CUSHION, LOWER, RIGHT
	2-296-558-00	CUSHION, UPPER
	3-701-641-00	BAG, POLY (FOR SEG-2000A/AP/APM)
	3-701-629-00	BAG, POLY (FOR CORD)
	3-701-630-00	BAG, POLY (FOR MANUAL)
	⚠ 3-773-457-22	**MANUAL, INSTRUCTION (U/C)**
	⚠ 3-773-457-11	**MANUAL, INSTRUCTION (PAL, PAL-M)**

12-5. JIG

Ref. No.	Parts No.	Description
	J-6030-690-A	**EXTENSION BOARD, EX-20**

NOTE:

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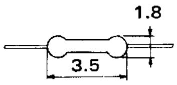
CARBON RESISTOR (1/6W)

±5%, 1/6W, non-special type
2.2Ω through 1MΩ



Parts No. 1-247-□□□-00

Value	Parts No. −□□□−
1Ω	−
1.1	−
1.2	−
1.3	−
1.5	−
1.6	−
1.8	−
2	−
2.2	767
2.4	768
2.7	769
3	770
3.3	771
3.6	772
3.9	773
4.3	774
4.7	775
5.1	776
5.6	777
6.2	778
6.8	779
7.5	780
8.2	781
9.1	782
10Ω	783
11	784
12	785
13	786
15	787
16	788
18	789
20	790
22	791
24	792
27	793
30	794
33	795
36Ω	796
39	797
43	798
47	799
51	800
56	801
62	802
68	803
75	804
82	805
91	806
100Ω	807
110	808
120	809
130	810
150	811
160	812
180	813
200	814
220	815
240	816
270	817
300	818
330	819
360	820
390	821
430	822
470	823
510	824
560	825
620	826
680	827
750	828
820	829
910	830
1kΩ	831
1.1	832
1.2kΩ	833
1.3	834
1.5	835
1.6	836
1.8	837
2	838
2.2	839
2.4	840
2.7	841
3	842
3.3	843
3.6	844
3.9	845
4.3	846
4.7	847
5.1	848
5.6	849
6.2	850
6.8	851
7.5	852
8.2	853
9.1	854
10kΩ	855
11	856
12	857
13	858
15	859
16	860
18	861
20	862
22	863
24	864
27	865
30	866
33	867
36	868
39	869
43kΩ	870
47	871
51	872
56	873
62	874
68	875
75	876
82	877
91	878
100kΩ	879
110	880
120	881
130	882
150	883
160	884
180	885
200	886
220	887
240	888
270	889
300	890
330	891
360	892
390	893
430	894
470	895
510	896
560	897
620	898
680	899
750	900
820	901
910	902
1MΩ	903